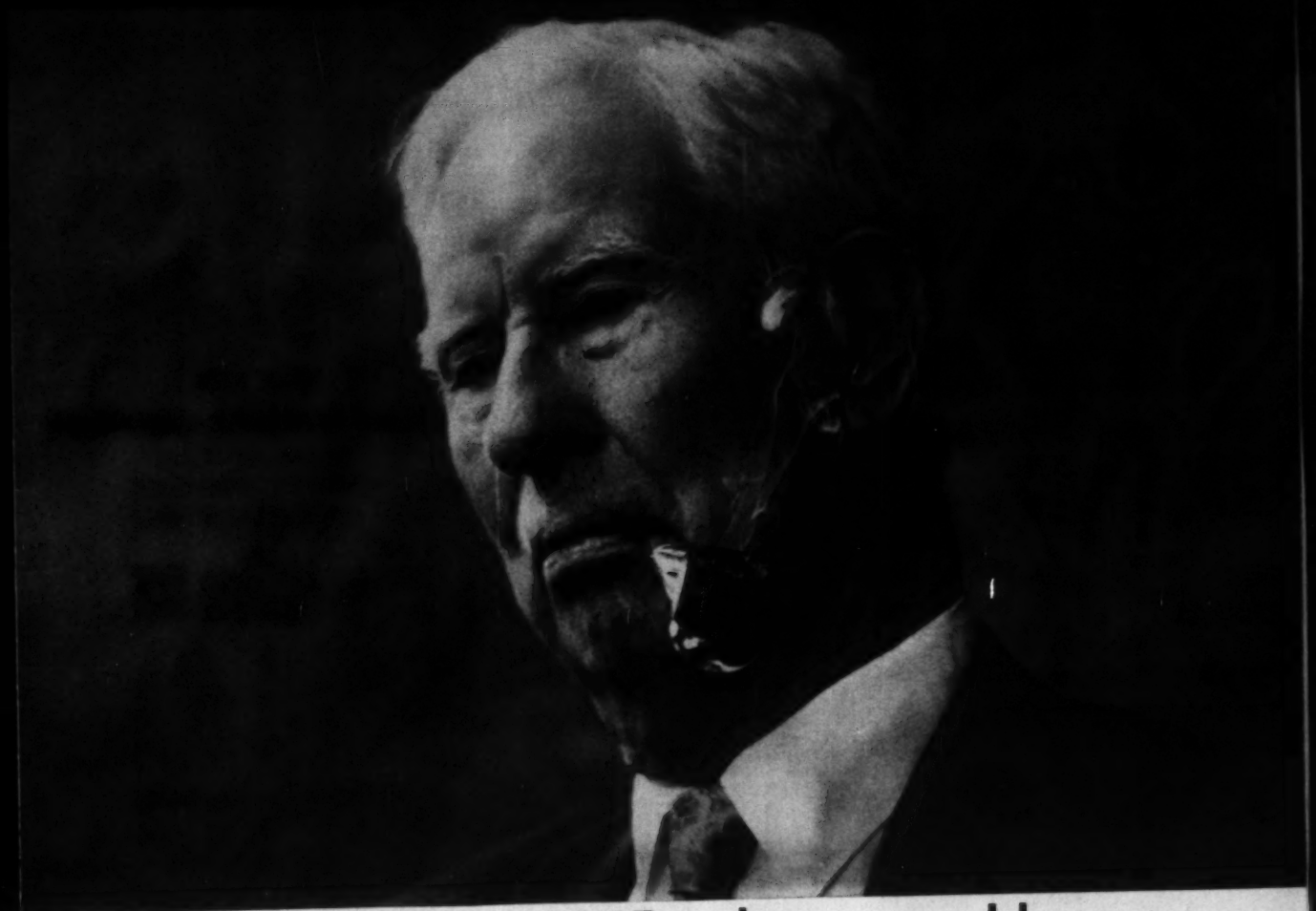
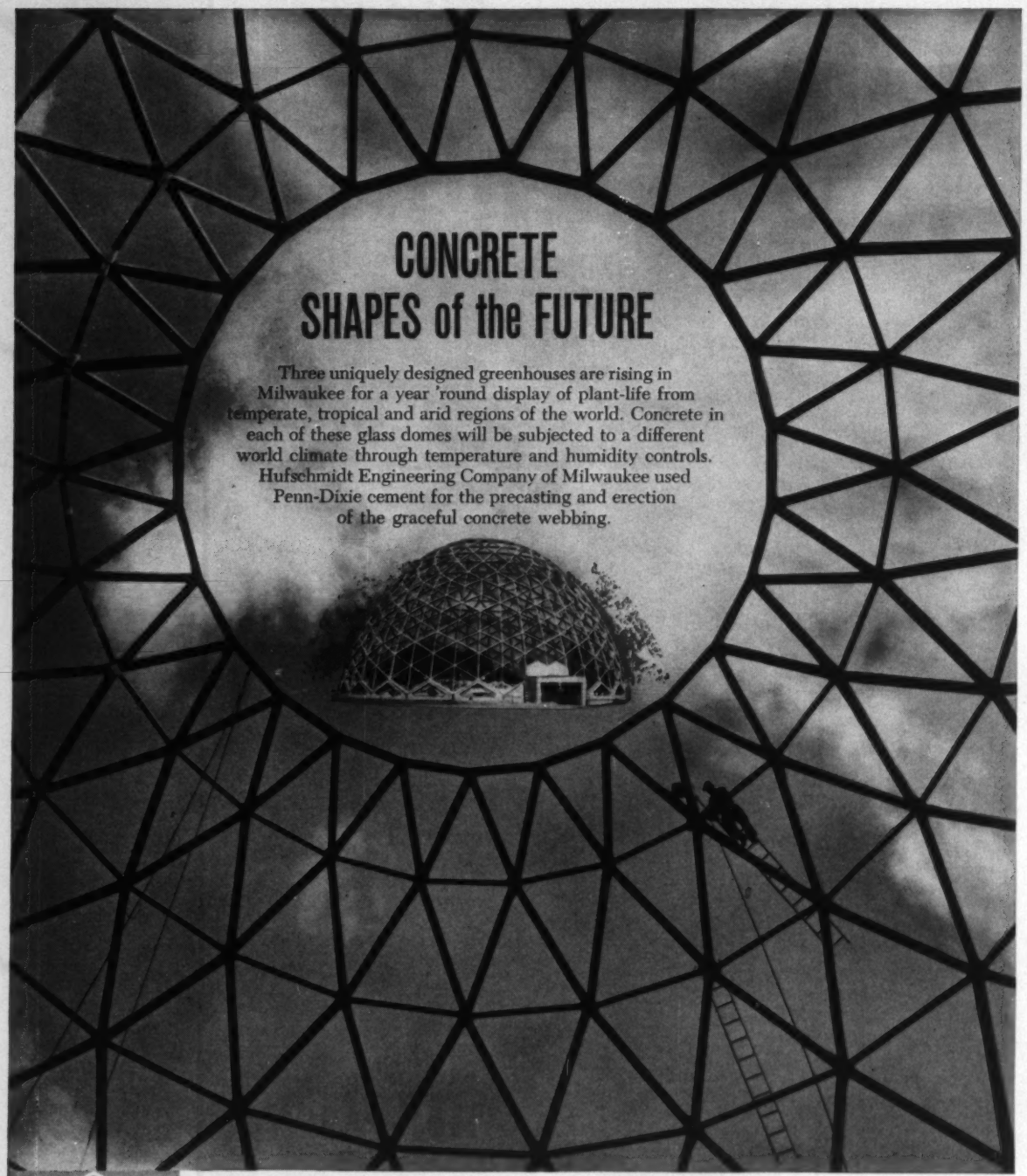
ENGINEERING NEWS-RECORD



Guy F. Atkinson: ASCE to honor an old pro p.65

A McGRAW-HILL PUBLICATION

STEVENS RICE GS
UNIV MICROFILMS INC EDI
313 N FIRST ST
ANN ARBOR MICH



CONCRETE SHAPES of the FUTURE

Three uniquely designed greenhouses are rising in Milwaukee for a year 'round display of plant-life from temperate, tropical and arid regions of the world. Concrete in each of these glass domes will be subjected to a different world climate through temperature and humidity controls. Hufschmidt Engineering Company of Milwaukee used Penn-Dixie cement for the precasting and erection of the graceful concrete webbing.

PORTLAND PENN-DIXIE CEMENT

PENN-DIXIE CEMENT *Corporation*

REGULAR, HIGH EARLY STRENGTH AND MORTAR CEMENTS

OFFICES

Atlanta
Boston
Buffalo
Chicago
Des Moines
Detroit
Holland, Mich.
Milwaukee
Nazareth, Pa.
New York
Petoskey, Mich.
Philadelphia
Pittsburgh

PLANTS

Bath, Pa.
Nazareth, Pa.
Penn-Allen, Pa.
West Winfield, Pa.
Buffalo, N. Y.
Kingsport, Tenn.
Richard City, Tenn.
Clinchfield, Ga.
Des Moines, Iowa
Petoskey, Mich.

DISTRIBUTING PLANTS

Chicago
Milwaukee
Detroit
Holland, Mich.

Penn-Dixie means Permanent Dependability

Owner: *Milwaukee County Park Commission* • Architect: *Donald L. Grieb, Milwaukee* • General Contractor: *Stevens Construction Corp., Milwaukee*

1896-laying New Bedford's 48-in. steel main

(and it's still in service!)

The quaint scene shown here occurred during installation of eight miles of 48-in. ID riveted steel pipe in New Bedford, Massachusetts, in 1896. Pipe-laying methods were primitive, by present-day standards, but even then steel was a preferred material for transmission mains.

The Water Department reports that there has never been a failure in over sixty years of operation. In fact, they expect the line to remain in service for many years to come.

So it is throughout the country: water departments report steel pipe in service after thirty, forty, fifty or more years. We'll gladly document this statement on request.

Because of today's vastly superior grades of steel, fabricating methods, and coating materials, many engineers conservatively estimate steel pipe's life expectancy as fifty years minimum, and most likely upwards of a century.

Add *long life* to steel's unequalled strength, high flow capacity, and leakproof qualities, and you can see why tar-enameled steel pipe is the logical material for water mains. For more information, simply get in touch with the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

Much of the line lies in swampy terrain. Yet the pipe has never failed, although its only protection was a tar-dip.

Steel

for strength
... economy
... versatility

BETHLEHEM STEEL

BETHLEHEM STEEL

"Call FOSTER for track ... get relayers PLUS"

Installing or maintaining sidings or other industrial track? Get Foster Quality Relaying Rail with the big "plus" of lower cost. And get all the necessary track accessories and tools to do the job.

You'll save on freight from Foster's nationwide warehouses, all of which stock all standard sections of new and relaying rail, plus *new* rail for crane runways and other special applications. You'll save too, using Foster Relaying Rail for safety barricades, reinforcing and heavy-duty structural uses.

To simplify economical track maintenance, send for Free Track Inspection Kit EP-10.

Write or call **L. B. FOSTER CO.**
Pittsburgh 30, New York 7, Chicago 4,
Los Angeles 5, Cleveland 35,
Houston 2, Atlanta 8

Faster From Foster

Rail • Steel-Sheet Piling • Pipe

ENGINEERING NEWS-RECORD

EIGHTY-SIXTH YEAR OF PUBLICATION

MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York- LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600
Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Managing Editor, **Arthur J. Fox, Jr.**

Senior Editors, **Frederick S. Merritt, James B. Sullivan, Leo J. Ritter, Jr.**

Transportation—Roads, Railways, Airports, Pipelines, Ports
Leo J. Ritter, Jr., Edward M. Young, Jr., Joseph F. Wilkinson

Buildings—Commercial, Industrial, Housing; Codes, Specifications
Frederick S. Merritt, David B. Hill, Marianne Friedland, C. W. Griffin, Jr.

Water—Sanitation, Water Supply, River Control, Power, Irrigation
James B. Sullivan, William W. Jacobus, Jr., Marie Zanfardino

Business—Management, Labor, Finance, Markets, Contracts, Economics
Robert J. Stinson, Charles J. Harding

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Martha Alexander, *Staff Assistant*

Lauress L. Wise, *San Francisco, 68 Post St.*
Anne Garcia, *Staff Assistant*

Copy—Production
Irwin Landau, Nancy Parkes, John C. Greenough, Robert M. Echols

Presentation
Harry W. Jensen, Robert G. Young

Correspondents, Bureaus
Leah Shanks

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra, Marie Moravsik, Eleanor Queret, Francine Todisco, Helene Wahlers
James Webber, Ruth Carlson, *Economics*
William P. Larkin, *Prices, Wages, Indexes*
Evelyn Huber, Charlotte Foster, *Statistics*
D. Arlene Ricker, *Unit Prices*

Editorial Research and Indexing
Eva Gierat, Rene Hay, Jane Jacobson

Consulting Editors: **Van Tuyl Boughton, Nathan A. Bowers**

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Gloria R. Jennings, Alan Adams, Glen Bayless, Roy Calvin, Herbert Cheshire, Anthony DeLeonardis, John Donaldson, Jay Flocken, Boyd France, Clyde Henning, Don Loomis, Daniel McCrary, Gladys Montgomery, Arthur Moore, Burkey Musselman, Seth Payne, Dean Reed, Mort Reichek, Margaret Reid, Caroline Robertson, Thomas Russell, David Secrest, Richard Smith, Vincent Smith.

Domestic News-Bureaus: Atlanta—801 Rhodes-Haverty Bldg., B. E. Barnes, Chief, Frances Ridgway; **Chicago**—520 N. Michigan Ave., Stewart Ramsey, Chief, Bruce Cross, Sheila Rowe; **Cleveland**—55 Public Square, Arthur Zimmerman, Chief, Violet Forsha; **Dallas**—901 Vaughn Bldg., Marvin Reid, Chief, Lorraine Smith, Mae Brown; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Sally Ayling, Wesley Perry, Jr.; **Los Angeles**—1125 W. 6th St., Kemp Anderson, Jr., Chief, Carl Havighorst, Michael Murphy, Marvin Petal, Bill Wallace, Mary Williams; **San Francisco**—68 Post St., Jenness Keene, Chief, Donald Winston, Alison Lunt; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: London—John Shinn; **Paris**—Robert Farrell; **Mexico City**—Peter Weaver; **Bonn**—Pete Forbath; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Rio de Janeiro**—Leslie Warren; **Caracas**—John Pearson; **Moscow**—Ernest Conine.

Correspondents: In 70 principal U. S. cities and 70 cities throughout the world.

Director of News Bureaus: John Wilhelm; **Managing Editor, Margaret Ralston.**

McGraw-Hill Economics Department: Dexter M. Keezer, Director.

Publisher, Robert F. Boger

ENGINEERING NEWS-RECORD, Vol. 165, No. 14, October 6, 1960

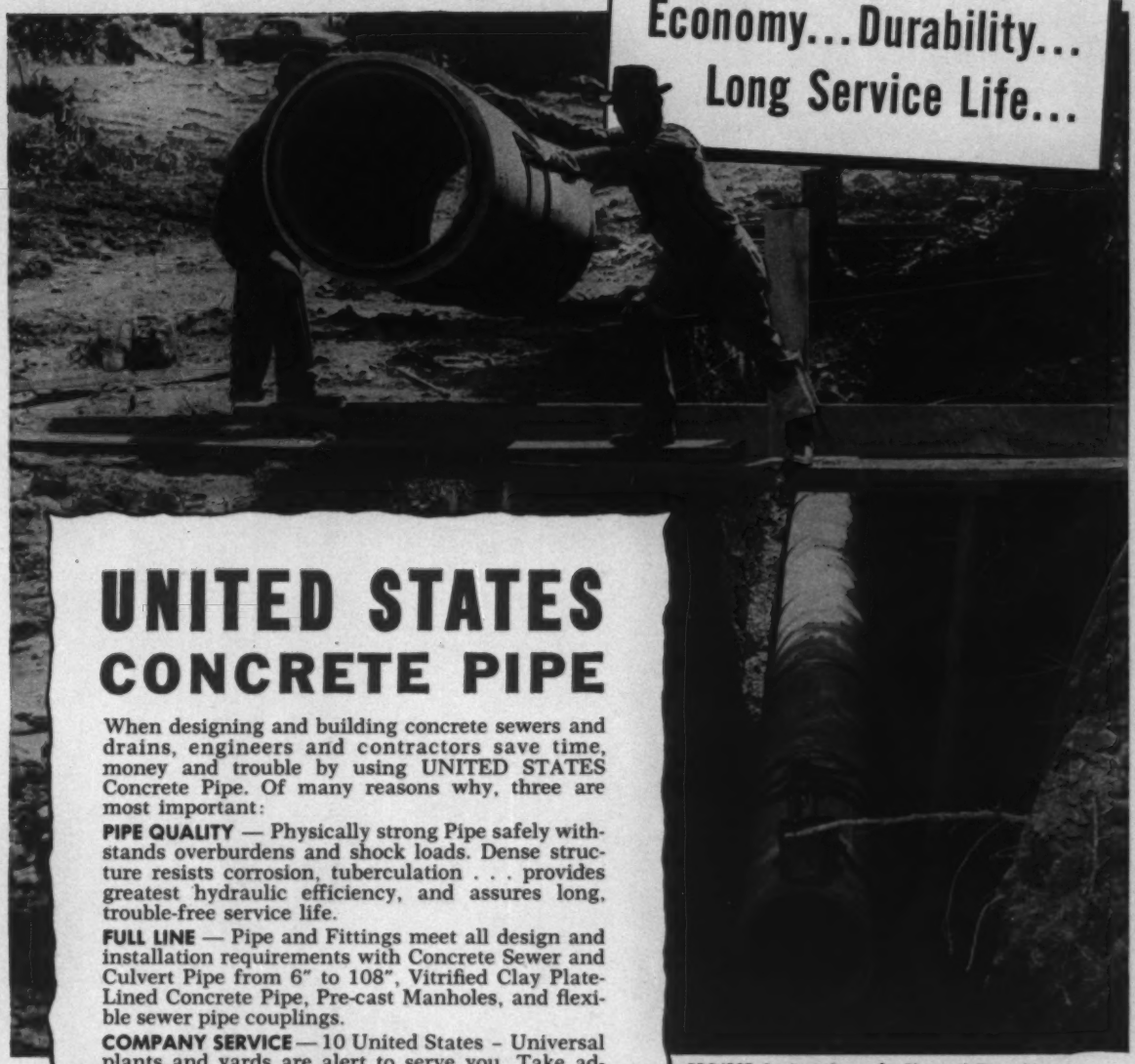
Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Printed at Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail postage paid at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

©Copyright 1960 McGraw-Hill Publishing Co., Inc. All Rights Reserved.

UNCONDITIONAL GUARANTEE: We agree, upon request to our New York office, direct from paid-up subscribers, to cancel any subscription if ENGINEERING NEWS-RECORD's editorial service is unsatisfactory, and will refund the proportionate subscription price of any unmailed copies.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Fulfillment Manager, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



UNITED STATES
CONCRETE PIPE

When designing and building concrete sewers and drains, engineers and contractors save time, money and trouble by using UNITED STATES Concrete Pipe. Of many reasons why, three are most important:

PIPE QUALITY — Physically strong Pipe safely withstands overburdens and shock loads. Dense structure resists corrosion, tuberculation . . . provides greatest hydraulic efficiency, and assures long, trouble-free service life.

FULL LINE — Pipe and Fittings meet all design and installation requirements with Concrete Sewer and Culvert Pipe from 6" to 108", Vitrified Clay Plate-Lined Concrete Pipe, Pre-cast Manholes, and flexible sewer pipe couplings.

COMPANY SERVICE — 10 United States - Universal plants and yards are alert to serve you. Take advantage of United States Concrete Pipe for your projects, and be assured of longer-lasting concrete sewers and drains, installed at lower cost.

6098

PROJECT: Sanitary Sewer for Plymouth Township Municipal Authority, Plymouth Meeting, Pa.

ENGINEERS: Albright & Friel, Consulting Engineers, Philadelphia, Pa.

CONTRACTOR: G.H.D. Construction Co., Middletown, Pa.

PIPE: 18", 21" and 24" Reinforced Concrete Culvert Pipe with flexible couplings.

UNIVERSAL SEWER PIPE DIVISION

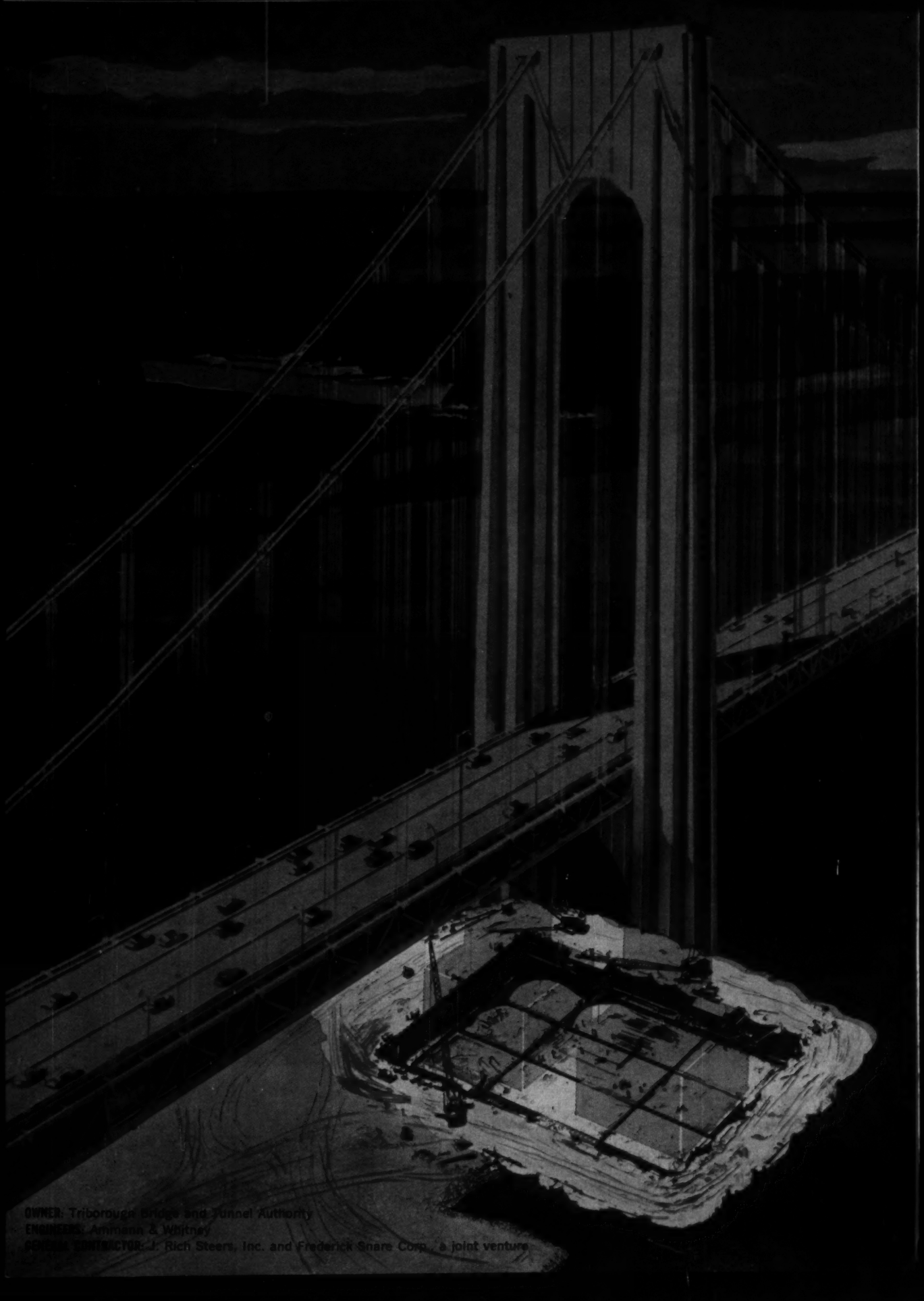
UNITED STATES CONCRETE PIPE CO.

A Subsidiary of Pittsburgh Coke and Chemical Company

SALES OFFICES:

Baltimore 27, Md.—Halethorpe Branch, Box 7428 ..... Tel. CI-2-7400
Philadelphia, Pa. (Mail—Bristol, Pa.) ..... Tel. EN-6015
Bristol, Pa., Box 30 ..... Tel. ST-8-5571
Cincinnati 44, Ohio, Box 536 ..... Tel. LO-1-7846
Ft. Lauderdale, Fla., Box 958 ..... Tel. LU-3-7220
Kalamazoo, Michigan ..... Tel. DA-7-3016
Oakdale, Pa., Box 126 ..... Tel. OW-3-9403

GENERAL OFFICES • 1500 Union Commerce Bldg. • Cleveland 14, Ohio • Tel. MAIN 1-5240


OWNER: Triborough Bridge and Tunnel Authority
ENGINEERS: Aminnana & Whitney
GENERAL CONTRACTOR: J. Rich Steers, Inc. and Frederick Snare Corp., a joint venture

Verrazano-Narrows Bridge...

with the largest suspension span in the world (4,260') will connect Brooklyn and Staten Island. ***To solve the dewatering problem for both tower piers . . . the Contractor selected Griffin.***

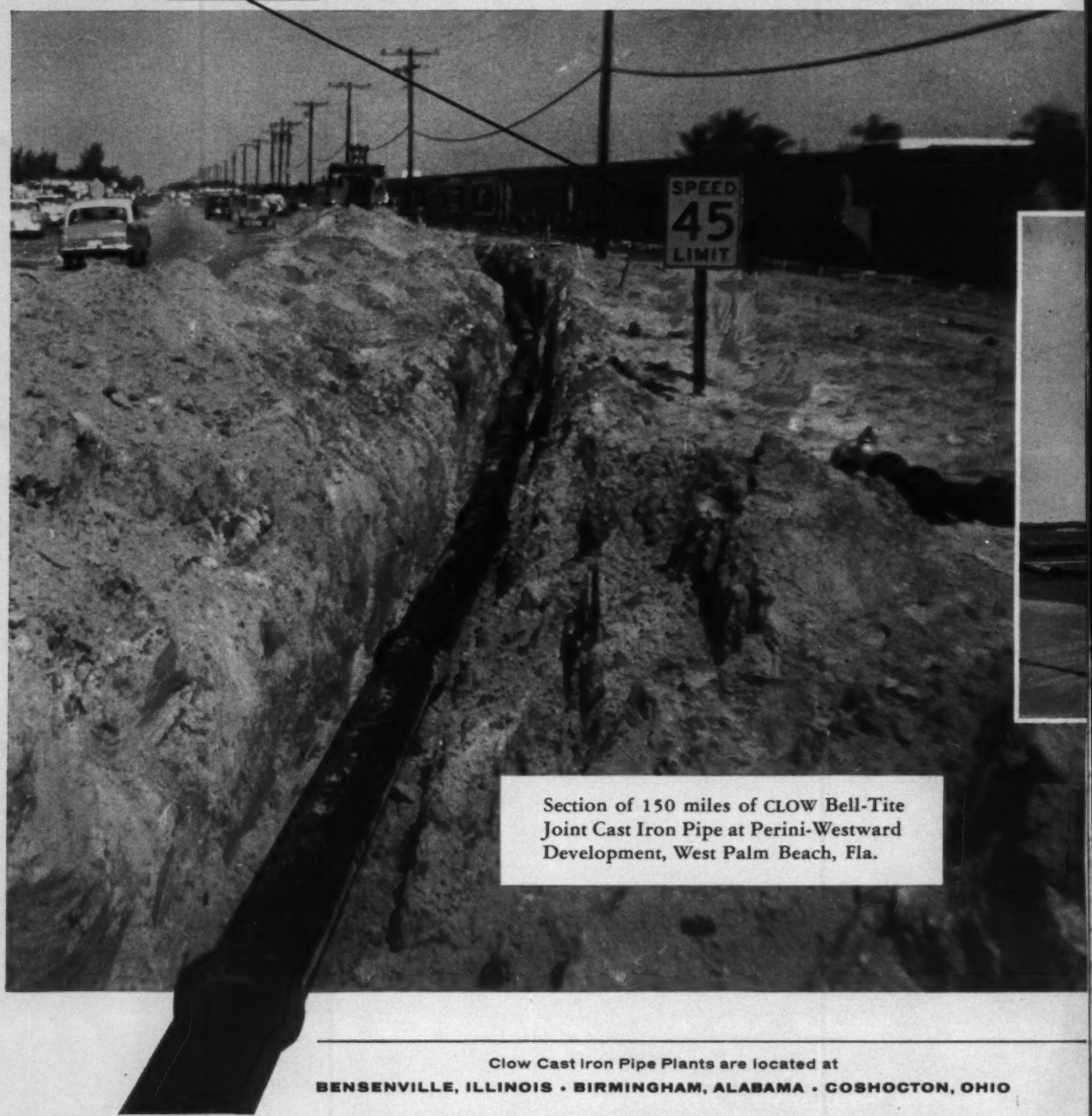
SALES/RENTAL/CONTRACT **GRIFFIN**

GRIFFIN WELLPOINT CORPORATION, General Office: 881 E. 141st St., N.Y. 54, N.Y.

Branches: Hammond, Ind. • Jacksonville, Fla. • New York, N.Y. • Houston, Tex.
Redwing, Minn. • W. Palm Beach, Fla. • Norfolk, Va. • Gulfport, Miss.

CLOW

This SIGN applies to the highway



Section of 150 miles of CLOW Bell-Tite Joint Cast Iron Pipe at Perini-Westward Development, West Palm Beach, Fla.

Clow Cast Iron Pipe Plants are located at

BENSENVILLE, ILLINOIS • BIRMINGHAM, ALABAMA • COSHOCTON, OHIO

CAST IRON

PIPE

There is no limit to how fast you can lay

CLOW Bell-Tite® JOINT CAST IRON PIPE

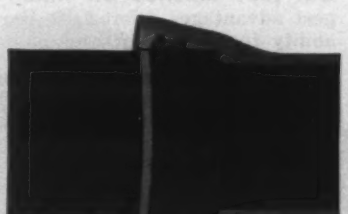
You can install CLOW Bell-Tite Joint Cast Iron Pipe as fast as you can dig a shallow trench. Photo shows the back hoe which clawed open the trench lowering a length of Clow pipe into it.

Over 150 miles of Clow Bell-Tite Joint pipe are the life lines of the water and sewage facilities for this Perini-Westward Development at West Palm Beach, Fla. Time-saving installation plus the economy of material—no accessory but a single molded rubber gasket—are important factors in this $4,000,000 waterworks project installation. One of the owners of this "City within a City" is Louis R. Perini, chairman of the board of the Milwaukee Braves and president of the Perini corporation.

CLOW Bell-Tite Joint Cast Iron Pipe can speed your installations, too. Let us tell you about its many advantages.

Clow Bell-Tite Joint Pipe saves time and money

Assembly is easy and rapid. Just wipe the joint clean, lubricate and push spigot into the bell. When yellow stripe is no longer visible, joint is bottle tight. A single rubber gasket is the only accessory. There are no bolts, no nuts, no followers, no couplings, no extras.



Patent No. 2898131

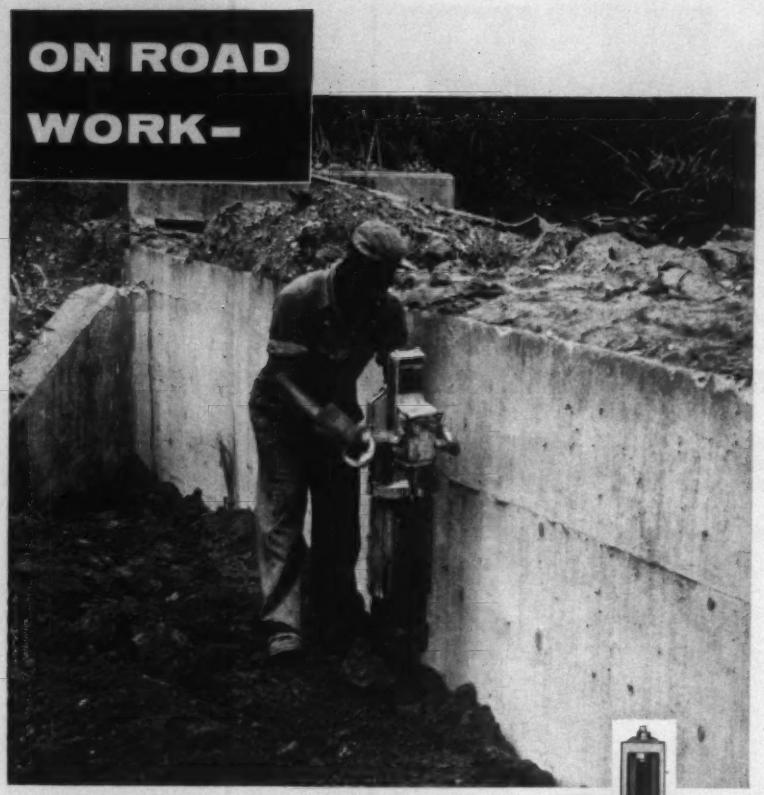
CLOW CAST IRON PIPE

JAMES B. CLOW & SONS, INC.
201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company
Waterford, N.Y.

Iowa Valve Company
Oskaloosa, Iowa

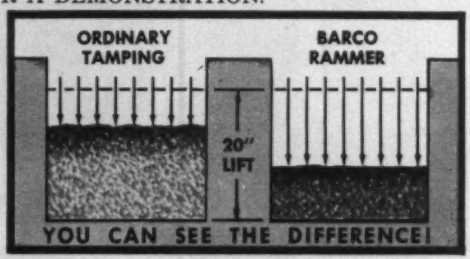


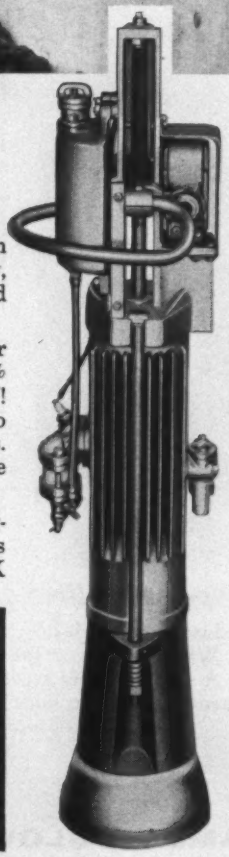
Barco Rammers are Essential

CHECK THE RECORDS for *soil compaction* on every top ranking highway, toll road, thruway, or freeway built in recent years and you will find Barco Rammers!

Easily meet rigid specifications—In test after test, Barco Rammers have delivered 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful in restricted areas. ONLY Barco can produce specified high degree compaction on lifts up to 20 inches.

Get jobs finished on time—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. ASK FOR A DEMONSTRATION.





FOUNDED 1908
BARCO
PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
5141 Hough Street • Barrington, Illinois

Sold and Serviced by Nation's Leading Distributors

Reader Comment

Soil Classifications

SIR—I read with interest the editorial "Keep Soil Types Simple" (ENR Aug. 25, p. 96). I agree with your suggestion that the number of classifications be kept to a minimum, but cannot agree that engineering soil classifications are adequate.

I believe the basic classification could be tied to a particle size determination. The divisions between gravel and sand, between sand and silt, and between slit and clay should be carefully defined. The ASTM does this adequately, and its divisions should become the basis for a classification system. The ASTM divisions are respectively: the No. 4 sieve, 0.05 mm and 0.005 mm. Personally, I favor the use of a triaxial chart in which the sand, silt and clay fractions are the basis of the classification. The presence of gravel or boulders can be noted by prefix.

The physical properties of the soil not completely related to particle size are important, but need not be part of a textural classification.

Personally, I don't care for the Unified System because it does not permit an accurate classification of the —200 sizes. Perhaps this job could be turned over to the joint ASTM-ASCE Committee on Nomenclature. ASTM 653-58T indicates no divisions as to particle size limits for sand, silt and clay.

C. W. BRITZIUS, PRESIDENT
Soil Exploration Co.,
St. Paul, Minn.

What Else Is New?

SIR—I was rather surprised to see you report the truck delivery tunnel at Del Amo Shopping Center as an innovation (ENR Aug. 25, p. 32).

This has been standard procedure in regional shopping centers for at least 12 years to my knowledge. Construction has taken the form of structural steel with concrete arch; cast-in-place reinforced concrete; precast reinforced concrete; precast pretensioned concrete.

I was the structural engineer on two such projects: the new Connecticut Post Center at Milford, Conn., and the Menlo Park (N.J.) Shopping Center.

ROBERT E. LEVIEN
29-46 *Northern Blvd.*
Long Island City 1, *N. Y.*

(*Reader Comment continued p. 12*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

IBM 1620 cuts through earthwork computations at the rate of a section every 10 seconds.

Big jobs and big opportunities lie ahead for road builders who are geared to meet them . . . with modern equipment, superior engineering, and trained men. With the IBM 1620 you get all three . . . and at low cost:

Modern Equipment. The 1620—although only desk-size—is the most advanced engineering computer in its field. It offers features, such as solid state design and stored program control, available previously only in larger system. It performs in seconds complex calculations that now take hours.

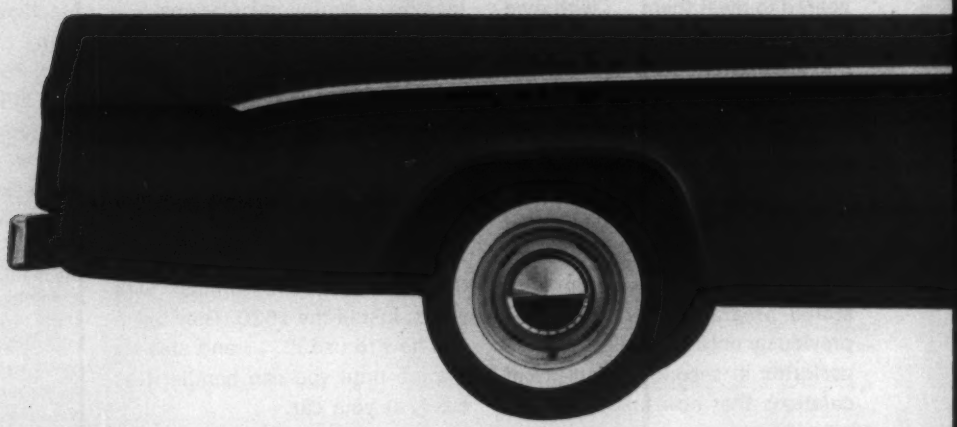
Superior Engineering. Because the 1620 offers tremendous time-savings over manual calculations, you can afford to examine alternate designs, in detail. You can eliminate many engineering drawings. You can use your engineering talent to find the best way—not just a good one—and make important savings at every turn.

Trained men—IBM men, who know their jobs and are familiar with yours, install the 1620. They teach you how to use it . . . and stay on the job until you can handle it as easily as your car.

The IBM 1620 can solve problems encountered in roadway design. Machine instructions for solving many of them have already been prepared and are ready for your use. Further backing the 1620 is a full range of IBM supporting services to assure you Balanced Data Processing.

With the IBM 1620 the engineer can see the results of his decisions at the rate of a section every ten seconds. In this short time, the 1620 can read a preliminary cross-section, compute the profile grade, select slopes, locate slope stakes, compute volumes, adjust for shrinkage, compute next volume, type the results.

BALANCED DATA PROCESSING



FROM DODGE FOR 1961

A TOTALLY NEW KIND OF TRUCK

THE DART PICKUP

THE FIRST AND ONLY TRUCK WITH COMPACT-ECONOMY

WHAT DO WE MEAN, THE ONLY TRUCK WITH COMPACT-ECONOMY?

We mean that the new Dart Pickup is compact in everything but work capacity. It has a compact diet. It handles like a compact. The upkeep costs are compact. But in the work department this baby is a full half-ton hauler. It'll do a sleeves-up job of work every day, day in and year out. That, mister, is what we mean by *compact-economy*. A truck that is economy-minded, a tough devil of a truck, all truck, all work, all the way.

WILL OUR ENGINE, THE NEW SLANT-6, ACTUALLY DELIVER MORE MILES A GALLON THAN COMPETITION?

There's only one way to answer that kind of question, and that's to test the new Dart Pickup against its biggest competition, Ford and Chevrolet. That's just what we did. Result? Time after time the new Slant-6, overhead valve, 225-cubic-inch engine came out ahead on actual miles-per-gallon.

As for the engine itself, it is slanted 30 degrees from the vertical. This makes possible highly efficient manifolding, both intake and exhaust. Also gives you plenty of underhood work room which, by the way, you'll seldom need. This new engine of ours is a mighty tough customer.

Mounted on the engine, as standard equipment, is an alternating current generator. It will charge the battery even at idle. Because the battery is more fully charged, more of the time, it will last longer. Small thing? Maybe. But it saves you money.

You'll be interested to know that many of the engine parts are aluminum. Things like the water and oil pump housing, the distributor case. Extensive use of aluminum means less dead weight. More payload. More *compact-economy!*

IS IT TRUE THAT THIS TRUCK IS NEW DOWN TO THE WHEEL STUDS?

Take a look at the picture above. It's unretouched, by the way. See anything familiar? You bet you don't. This one is all-out new. Not new, mind you, for the sake of newness, but functionally new. New cab, new body. New, easier clutching, and shifting, and handling. As a matter of fact this Dart Pickup of ours even has a new soft sound. Wait'll you've had one on the job. You'll agree it's a great new way to work.

WHAT'S THIS I HEAR ABOUT A NEW THING CALLED "SEDAN RIDE"?

You know how a truck ride used to be. Not very pleasant. Well, this year Dodge has done something about it, with a virtually service-free suspension system that takes the "truck" right out of truck ride. A side benefit of this new suspension is that front tires don't pay the penalty for your pleasant ride. You get every mile of rubber you paid for.

ANYTHING I OUGHT TO KNOW ABOUT THE REST OF THE '61 DODGE LINE?

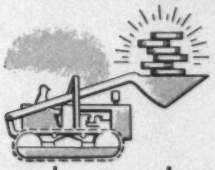
Sure! You ought to know about the 1961 Dodge conventional and cab forward models, the four-wheel drive series, door-to-door jobs, the school bus chassis. There's Six and V8 gasoline power. There's Cummins diesel power. There's a weight spread of 4250 lbs. GVW to 76,800 lbs. GCW.

OK, NOW HOW DO THE PRICES STACK UP?

The new Dart Pickup and the 1961 Dodge line of trucks are priced to compete with every truck coming or going. And a Dodge truck will skin the pants off any truck for muscle, hustle and money-saving ways. You can depend on it!

SEE THE DART PICKUP

CONTRACTORS: want to know about the best jobs coming up? Do you feel you're missing good opportunities to bid? Like to uncover more jobs that are "tailor-made" for you...when and where you want them? You need daily Dodge Reports!!



Dodge
F.W. DODGE CORPORATION
Reports
HELP GENERAL CONTRACTORS GET MORE BUSINESS

If you do business in the new construction field—

SEND FOR THIS FREE BOOKLET

F. W. Dodge Corporation, Construction News Division
119 West 40th Street, New York 18, N. Y., Dept. ENR-100

Send me the booklet: "How General Contractors Get More Business in New Construction" and let me see some typical Dodge Reports. I am interested in the general markets checked below.

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area_____
Name_____
Company_____
Address_____
City_____ Zone_____ State_____

. . . Reader Comment

Maybe in the U. S.

SIR—A news item with a picture of a railroad bridge now being built in Quincy, Ill. (ENR Sept. 8, p. 25) says, "The 2,500-ft-long bridge will be the first major railroad crossing with high strength bolted connections."

The Dominion Bridge Company Limited, Vancouver Branch, built a 1,863-ft-long railroad bridge with seven truss spans comprising a total weight of 3,167 tons in 1957, in which the field joints were high strength bolted. This bridge was designed by A. B. Sanderson & Co. for the Pacific Great Eastern Railway Co. of British Columbia. We do not know if this was the first railroad bridge of any size to use high strength bolts as field connection but we are, of course, sure that it antedated the bridge to which you refer.

R. A. MCLACHLAN
Dominion Bridge Co., Ltd.
Vancouver, Canada

Zeros Missing

SIR—In your article "Tunnelers Claw, Shove Through Clay Under Boston Harbor," (ENR Sept. 8, p 32) two errors were made on page 37 in listing ventilating fan capacities.

The 12 fans to be installed for the Callahan Tunnel will each have a capacity of approximately 300,000 cfm (rather than 300 cfm) and the 14 fans for the Sumner Tunnel will each have a capacity of approximately 140,000 cfm, (not 14,000 cfm).

NATHAN NOVEMBER
Chief Design Engineer
Singstad & Baillie
New York City

For your calendar . . .

American Society of Civil Engineers, annual meeting, Hotel Statler Hilton, Boston, Oct. 10-14. Write: E. S. Kirkpatrick, American Society of Civil Engineers, 33 W. 39th St., New York, N. Y.

American Society for Metals, 42nd National Metal Exposition & Congress, Trade and Convention Center, Philadelphia, Pa., Oct. 17-21. Write: Chester L. Wells, Exposition Manager, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio.

National Safety Council, annual congress, Conrad Hilton Hotel, Chicago, Ill., Oct. 17-21. Write: Sid Cato, 425 N. Michigan Ave., Chicago 11, Ill.

National Society of Professional Engineers, fall meeting, Denver-Hilton Hotel, Denver, Colo., Oct. 18-21. Write: Paul H. Robbins, 2029 K St., N.W., Washington 6, D.C.

Building Research Institute, fall conference, Shoreham Hotel, Washington, D. C., Nov. 15-17. Write: Harold Horowitz, 2101 Constitution Ave., Washington 25, D. C.

Industrial Building Exposition & Congress, New York Coliseum, Dec. 12-15. Write: Clapp & Poliak, 341 Madison Ave., New York, N. Y.

FIP-RILEM Symposium on Grout for Prestressed Concrete, Norway Technical Highschool, Trondheim, Norway, Jan. 5-7. Write: Professor I. Lyse, Norges Tekniske Hogskole, Trondheim Norway.

American Road Builders Association, annual convention, Cincinnati, Jan. 18-20. Write: Norman T. Almquist, World Center Bldg., Washington 6, D.C.

When temperatures drop, Columbia Calcium Chloride in the mix keeps concrete jobs moving.

TEMPERATURE: 48°F JOB: ON SCHEDULE with Columbia Calcium Chloride in the mix

Faced with winter concreting and a time-tight schedule? Columbia Calcium Chloride in the mix any time the temperature drops below 70°F helps prevent lag in strength gain. Your jobs keep *moving* in spite of low temperatures. You get these specific time-and-money-saving benefits:

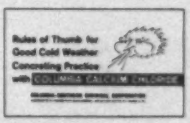
Higher Early Strength—At 40°F, the strength of Columbia Calcium Chloride treated concrete is as great in 1 day as untreated concrete is in 2 days. At 3 days, the strength is equal to 7-day strength of untreated concrete.

Faster Initial Set—Under normal conditions, Columbia Calcium Chloride reduces initial set from 3 hours to 1 hour. At lower temperatures, the accelerating effects are even more pronounced. You get finishers on and off the job faster, avoid costly overtime.

Early Form Removal—The use of Columbia Calcium Chloride means forms can be moved faster. Total time required for the job is cut.

Get all these Columbia Calcium Chloride cold weather benefits on your next job. Just add Columbia Calcium Chloride at the rate of 2% by weight of cement. Want technical help? Our calcium chloride engineers are at your service. For their assistance, just contact our District Sales Office nearest you or write to our Pittsburgh Office.

FREE—Write for free folder: "Rules of Thumb for Good Cold Weather Concreting Practice."



You'll like doing business with Columbia-Southern

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION • A Subsidiary of Pittsburgh Plate Glass Co. • One Gateway Center, Pittsburgh 22, Pa.
DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland Boston • New York • St. Louis • Minneapolis • New Orleans • Dallas Houston • Pittsburgh • Philadelphia • San Francisco
IN CANADA: Standard Chemical Limited

ALL OVER THE U.S.A., CONTRACTORS

power-steer and power-shift

NO ATTACHMENT! NO AFTER-THOUGHT! NO "STOP-GAP"!

Exclusive, years'-proven combined Planet Power-steering and Hi-Lo power-shifting are designed-in, built-in, basic standard equipment of the new 230-hp International TD-25!

Simplified TD-25 design is the only planetary system engineered and located to give you the dual advantages of "live track" steering and on-the-go shifting!

"Live track" Planet Power-steering eliminates load-limiting "dead-track drag"—gives power to pull full loads on turns, as well as on straight-aways. On-the-go, Hi-Lo power-shifting does away with time-wasting "gear-shift lag"—lets you match power to load instantly for full-speed cycles!

No wonder the new TD-25 can outearn king-sized clutch-steered crawlers up to 50%—on push-loading; land-clearing; overburden removal; benching; "mass-production" dozing; ripping; other tough jobs!

New TD-25 seven-roller tracks are strength matched to the full effort of the new 230-hp diesel engine. The "25" is platformed on super-rugged double-box beam frames—and is smoothly carried on International's dual-protected Dura-Rollers, the track rollers that make 1,000-hr lube intervals practical!

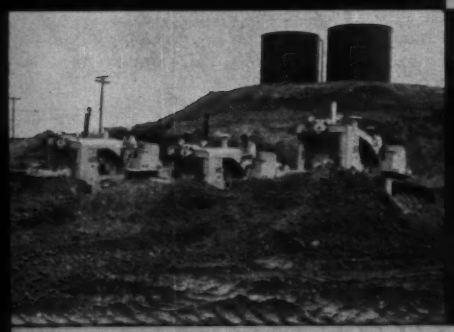
Power-shift and power-steer the "25" with king-sized loads—around curves, upgrade, anywhere. Compare the advantages of getting this exclusive performance, and getting it from years'-proven standard equipment. Prove what's behind the "25's" rapid rise to nationwide contractor acceptance. Let your International Construction Equipment Distributor demonstrate!

Though "out-rated" 105-hp by a king-sized, clutch-steered competitor, this nimble TD-25 proves able to outwork "the big one"—side-casting and benching to build Pacific Northwest mountain logging roads!

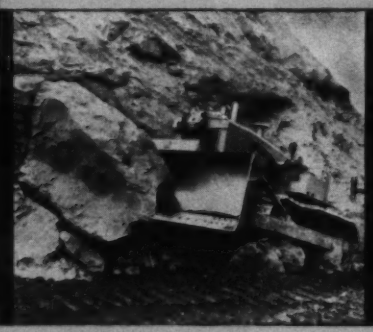
International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

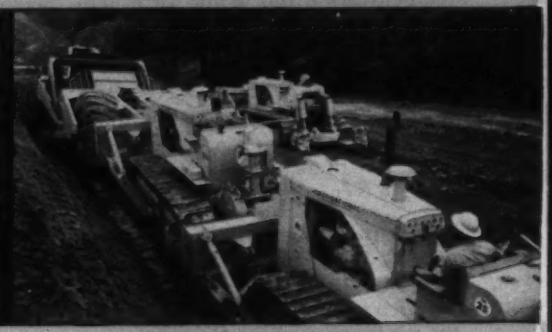
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



Three new International TD-25's of contractor V. E. Posey's fleet team up to prepare homesites from a mountainside—near San Diego, California. Dual-valving of the "25's" direct-start DT-817 engine provides for peak turbocharging efficiency—to deliver full-rated performance, from sea level to timberline!

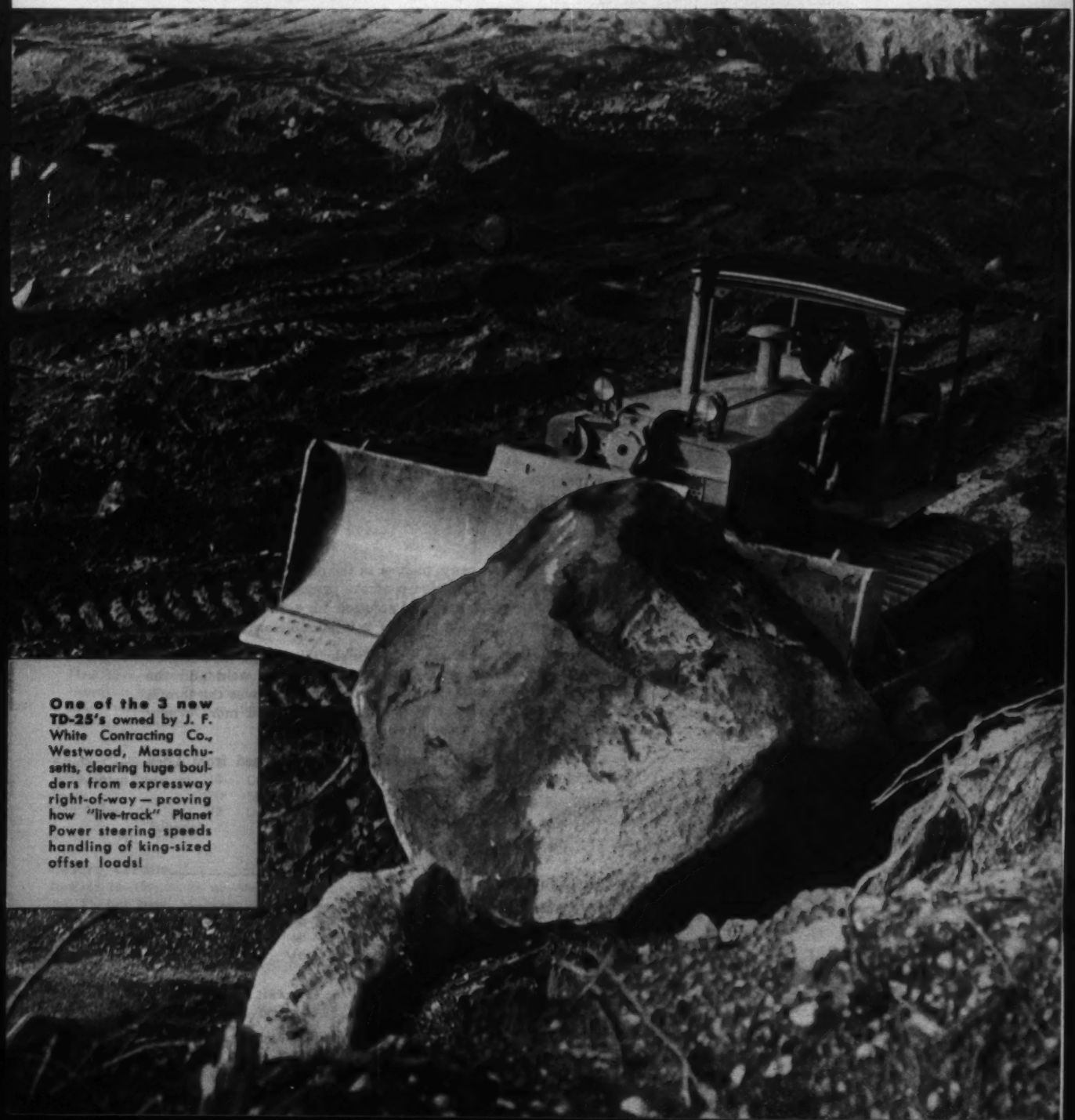


Cleaning the face of a Missouri strip mine behind a big dragline, this TD-25 pushes "tractor-sized" boulders aside with the greatest of ease. This "25" also builds dragline walkways and haul roads—and drastically cuts land-clearing costs for Peabody Coal Co.



For cycle-speeding push-loading, TD-25 power-shifting helps give "feather-touch" contact; maintains solid push-block contact on curves; gives gear-higher kick-outs than ordinary. The two "25's" tandem pushing the International 295 Payscraper®, and the third one ripping, belong to superhighway contractor Ed Bentley, Sylacauga, Alabama.

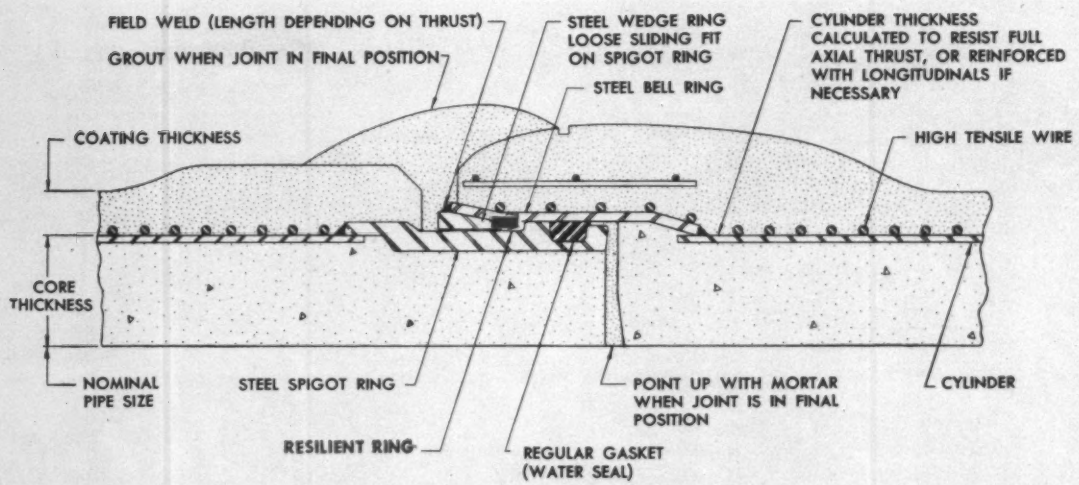
with TD-25 standard equipment!



One of the 3 new TD-25's owned by J. F. White Contracting Co., Westwood, Massachusetts, clearing huge boulders from expressway right-of-way — proving how "live-track" Planet Power steering speeds handling of king-sized offset loads!

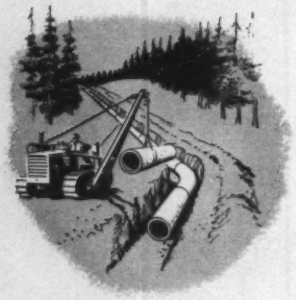
new

LOCK JOINT'S FLEXIBLE TIED JOINT *


FIELD WELD (LENGTH DEPENDING ON THRUST)
GROUT WHEN JOINT IN FINAL POSITION
STEEL WEDGE RING LOOSE SLIDING FIT ON SPIGOT RING
STEEL BELL RING
CYLINDER THICKNESS CALCULATED TO RESIST FULL AXIAL THRUST, OR REINFORCED WITH LONGITUDINALS IF NECESSARY
COATING THICKNESS
HIGH TENSILE WIRE
CORE THICKNESS
NOMINAL PIPE SIZE
STEEL SPIGOT RING
POINT UP WITH MORTAR WHEN JOINT IS IN FINAL POSITION
CYLINDER
RESILIENT RING
REGULAR GASKET (WATER SEAL)

RUBBER & STEEL FLEXIBLE TIED JOINT

SECURE...FLEXIBLE...WATERTIGHT



Lock Joint Pipe Company, pioneer in the development of efficient, flexible, watertight joints for concrete pressure pipe, once again is first with the most practical solution for restraining thrust at joints where conventional blocking is impossible or impractical.

A greater measure of flexibility is imparted to this field-welded joint by the resilient ring, located between the weld and the watertight rubber gasket seal. This ring also improves the tensile characteristics of the joint by distributing the load more evenly around the periphery of the joint ring.

Detailed description of this joint may be obtained from Lock Joint Pipe Company on request.

**Patent applied for.*

LOCK JOINT
CONCRETE PIPE

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 165, No. 14 October 6, 1960

Number of copies printed in this issue 86,647

CONTENTS

Highway Business Good, but Tight..... 21
Concrete Bridges Outnumber Steel..... 22
Two Utilities Eye Corps Dams..... 22
Prestressers Move to Mechanize..... 23
Placing Concrete: Phase Two of New Deck.... 24
Counties Join in Flood Control..... 25
PNYA—On Rebound—Woos Rails 25
Kaiser World Headquarters..... 26
ICBO Management Gets Vote of Confidence.... 28
Industry Sponsors Construction Courses..... 28
How Not to Resist Hurricanes..... 32
Campus Gets Pleated Dome Roof..... 32

FEATURES

Prestressing: Infant Industry Grows Up..... 34
Hawaiian Freeways Take Shape..... 44
Rx for a Rock-Choked Hospital Foundation.... 46

NEW PRODUCTS

Long Load Truck Has Narrow Cab..... 55
Culvert Formed From Aluminum..... 55
Wrench Adjusts Manhole Height..... 56
Plastic Pipe in Prefab Plumbing..... 56

MEN AND JOBS

At 86: New Honors for an Old Pro..... 65

BUSINESS AND FINANCE

U. S. Needles Europe on Aid..... 95
Oklahoma's Tollroad Hopes Sag..... 96
City Gets $42-Million Buildings Proposal..... 101
Construction Contracts Set Record Pace.....102
Cost Indexes Dip This Month..... 102

LABOR

Management Rights Are Slipping..... 103
New York Union Fights for 'Job Rights'..... 104
Hawaiian Labor Pact Challenged..... 104
GSA Presses Equality in Hiring..... 106
Industry Promotion 106

Reader Comment ... 8
Washington Observer 19
Books 70
Unit Prices 77
Materials Prices 78
Construction Reports. 80
Statistics, Indexes... 91
Legal 107
Editorials 116

Picture Credits

Cover, 65, 66—ENR; 24, 25, top—The Port of N. Y. Authority; 36, top, 37—Ross Bryan; 36, bottom—Formigh Bros.; 37, bottom—Roebling; 38, bottom—Buz Uilburn; 39, bottom—LEAP Assoc.; 44—R. Wenkam; 45—Williams Photography; 46, 47, 48—American Studio.

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

WINGS OVER GRAND CENTRAL—Grand Central City is Grand Central City no longer. The $100-million building going up over New York City's Grand Central Terminal will be called, ironically, the Pan Am Building, in honor of its biggest tenant, Pan American Airlines, which has leased 613,000 sq ft in the 2.4-million-sq-ft building.

RAIN, RAIN BLOW AWAY—Merritt-Chapman & Scott engineers used a jet engine to dry off a section of highway and permit paving after three days of heavy rain. The truck-mounted engine whooshed air heated to 900 deg into the puddles at 50 mph, drying a 600-ft section in four hours.

THE CAMPAIGN AND CONSTRUCTION—Vice President Nixon has outlined a 10-year construction program for new medical facilities and laboratories, but he didn't specify how much should be spent. Senator Kennedy has not elaborated on the Democratic platform, which promises federal aid to build medical schools.

STRENGTHENING TRADITION—The roof of historic Congress Hall, located next to Independence Hall in downtown Philadelphia, will be rebuilt under a renovation contract awarded to Cardel Co. of Philadelphia by the National Park Service. (For a special report on how Philadelphia is fitting itself to the future, see ENR next week.)

WANTED: A LAWYER—St. Joseph, Mo., reluctant to appropriate money for a needed sewage treatment plant, may be forced to do so under court order. At the request of the U.S. Public Health Service, the Justice Department has entered a suit—first of its kind—that will test whether the federal government can compel a city to comply with orders issued under the Federal Water Pollution Control Act.

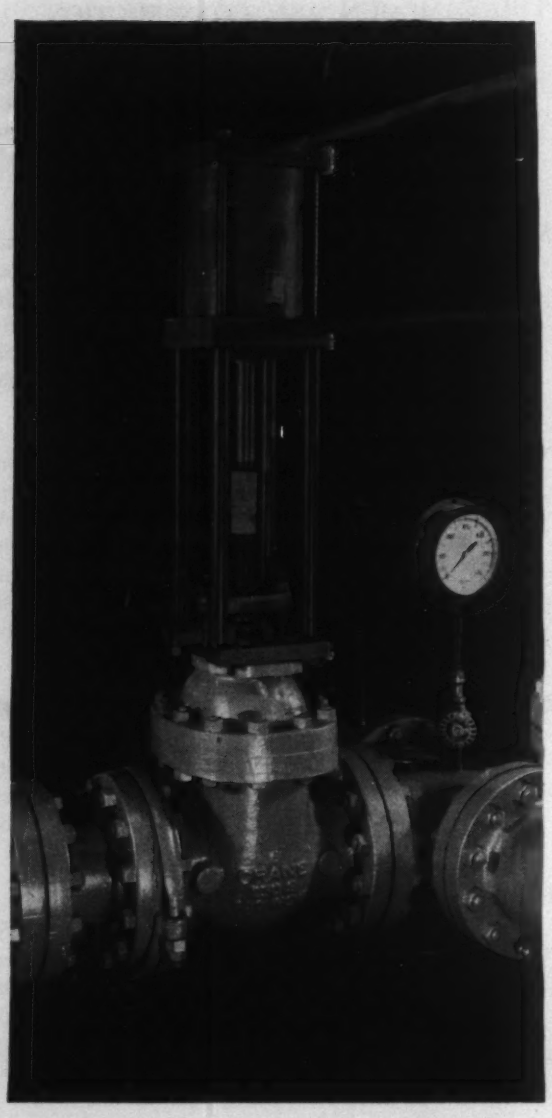
CODE COMES OUT CLEAN—The Kentucky Court of Appeals has upheld the right of the Louisville minimum housing code to require all dwelling units to have a basin and a bathtub or shower equipped with hot water. The code had been challenged by property owners and real estate agents.

HIRE AMERICAN—The Pennsylvania Highways Department has resumed its policy of hiring only U.S. citizens as civil engineers—the department had been hiring aliens to meet a critical shortage of civils. Noncitizens are still eligible as highway and bridge design engineers and as planning technicians. The policy shift will not affect the dozen non-citizens now working in engineer classifications.

CRANE
DIRECTION 70

...a fast-moving program of planned expansion, product development, and streamlined distribution to help our customers meet the competitive challenges of the Sixties.

NEW CRANE CYLINDER OPERATORS— LOW-COST POWER OPERATION FOR GATE VALVES



Now you can control any flow process easier and faster with cylinder operated Crane valves. Large valves . . . valves in remote or inaccessible locations . . . valves that must be cycled many times a day...all these can now be operated at the touch of a finger, saving time and manpower. These benefits of power operation are available from Crane now—at lower cost and in less time than ever before!

Crane cylinder operators are available for Crane O. S. & Y. iron body wedge and double-disc gate valves, and for pulp stock valves. Control devices for local or remote actuation supplied at extra cost.

And you can get these new operators for modernization of your present Crane gate valves, too. Easy-to-install adapter is shipped with every cylinder. Field installation can be done in 30 minutes or less, without removing the valve from the line.

This new valve operator is another example of how Crane solves your flow problems more economically, more productively. The Crane solution —the right answer to your flow problems—is as close as a phone call to your Crane distributor. Call him today.

CRANE

CRANE CO., INDUSTRIAL PRODUCTS GROUP
4100 S. Kedzie Avenue, Chicago 32, Illinois
Valves • Electronic Controls • Piping • Plumbing
Heating • Air Conditioning • Cyclotherm® Boilers • Heat
Exchangers • Marine Products • Powdered Metals

WASHINGTON OBSERVER

- For U.S.: Spending up; income down
- Columbia agreement certain

- **The federal government will spend more for construction this fiscal year—ending next June 30—than estimated last January.** The review of the 1961 fiscal year budget announced this week puts federal construction expenditures by the various government departments and agencies at over $7.6 billion compared with less than $7.5 billion estimated in January. So construction spending will about match the $7.7 billion estimated for the year that ended last June 30.

The budget review is the Administration's method of reconciling what the President's budget asked for in January and what Congress did during its session. It takes into account the appropriations Congress made and the apportionment of funds for spending or obligation for the rest of the fiscal year.

Over-all, the budget review discloses that spending will be $600 million above the $79.8-billion estimate while revenue will fall $2.5 billion under the hoped-for $84 billion. That will still leave a surplus of $1.1 billion, far short of the $4-billion surplus estimated last January.

The decline in revenue from what was anticipated is a candid acknowledgement by the Administration that the state of business is lagging.

But construction is maintaining a continued high level of activity. Here's how the President and his Budget Bureau see it:

Military construction: Some $1.35 billion, down about $12 million from the January estimate.

Highways: About $3 billion will be spent, up $145 million from January's estimate.

Army civil functions: The Administration expects spending of $920 million, up some $10 million from January's forecast.

Bureau of Reclamation: Spending of $279 million, down a bit from last January's estimate of $300 million.

Impacted school areas: Expenditures of $263 million, considerably up from the $207 million estimated in January.

College housing: Spending will be up $20 million from the January forecast to total $168 million.

—

- **An agreement on the development of the Columbia River is now nearly assured.** U. S. and Canadian government negotiators have reached a tentative agreement that puts construction of the Canadian High Arrow Dam first on the agenda.

In turn, the U. S. won Canadian agreement for construction of Libby Dam in Montana. Also scheduled for an early start is Canada's Mica Creek project. Of course, all this must be confirmed by the two governments later.

The agreement set off another procedural step: a series of hearings by the British Columbia government this November on licensing of the proposed dams.

After British Columbia completes its hearings and issues licenses for the proposed dams, the U. S. and Canadian negotiators again will meet to write the final wording of the treaty. This treaty will specify what dams are to be built, and what the U. S. payment to Canada (in dollars and kilowatts) will be for the increased U. S. hydro-power generation and improved river flow provided by the upstream Canadian projects. The development will involve capital expenditures estimated at $3 billion to $4 billion and boost the power output of Columbia River hydro plants by 9,000 megawatts.

AGGREGATE HANDLING BELTS

24" conveyor belt carrying rock from crusher rolls.

"Only 'U.S.' Belts hold up in handling crushed rock,"

says vice president of plant

"We use hundreds of feet of 'U.S.' Belting", says G. H. Lindekugel, Jr. of G. H. Lindekugel & Sons, Mitchell, So. Dakota. "Performance is extremely good. Our operation consists of highway construction and pit deposits. We average 600 tons per hour at our crushing plant. U. S. Rubber Belts work 12 hours a day, 6 days a week, carrying rock and gravel. We have no complaints. *Couldn't find any other belts that could handle crushed rock for any length of time.* 'U. S.' belts have been three years on the job, are in good condition".*

It's performance such as this that has made U. S. Rubber the largest manufacturer of industrial rubber products.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

*This installation was handled by "U. S." Distributor W. S. Nott, Minneapolis.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Highways at the Height of the Season

VOLUME:

Contract awards are 15% above the level and still moving.

COMPETITION:

Eight eager bidders make offers for average Interstate project.

PRICES:

Low bids on Interstate work run 11.9% below engineer estimates.

Highway Business Good, but Tight

Highway work is increasing, competition is getting tougher and bids are running lower.

A spurt of contracts in September brought the total of awards for the first nine months of 1960 to 15% higher than lettings for the same period last year.

The average number of bids on Interstate jobs is now eight, according to a Bureau of Public Roads report.

Low bids on federal-aid highway work are running more than 11% below engineer estimates.

It all adds up to a busy season with profits for many and losses for a lot more.

September's heavy load of highway and bridge contracts brought the third quarter total to $1,184 million. This is the largest quarterly volume since July-September, 1958, when Congress hosed emergency federal-aid funds into the highway program in an attempt to extinguish the recession.

The 1960 nine-month total is $3,188 million, as compared with $2,766 million tallied at the end of the third quarter in 1959.

In 1958 the bridge and highway award total at the end of the third quarter was $3,266.4 million.

Competition for federal-aid highway projects was tight during the first half of the year and is carrying over through the second half. An average of eight bids is submitted for Interstate work. Primary, including Interstate, draws 7.2 offers and secondary system jobs get 6.8 bids. Last year the average Interstate job drew 8.5 bids; in 1958 it was 7.7.

Awards for Interstate projects during the first six months of 1960 ran an average of 11.9% below engineer estimates.

Improving business is expected to decrease the number of contractors fighting for each job and to narrow the spread between low bid and estimate.

Federal-aid highway and bridge work is increasing. During the first half of 1960 contracts were $1,517 million, compared to $1,410 million for the first six months of 1959.

The trend, however, is to fewer and bigger contracts, as shown in the drop from 4,022 awards for the first half of 1959 to 3,762 for the first two quarters of this year. The average contract was $403,285, more than $50,000 higher than the average for early 1959.

All this means a big cut-off at the small-business end of the federal-aid work. There were 16% fewer contracts under $100,000 this year than there were in 1959. But things improved at the expensive end of the business. State highway departments let six contracts for projects valued at $10 million or more. There weren't any jobs that big during January-June, 1959.

The 15% advance in over-all work for the first three quarters of 1959 is outstanding, because 21 of 50 states show a decline in contract awards from last year's level. Two other states show no change at all.

In the Southern states, for instance, the values of bridge and highway awards for West Virginia, North Carolina and Georgia are more than 40% below their 1959 lettings.

The South's increase over last year's three-quarter mark is only 4%. It wouldn't be that high if Virginia's total hadn't leaped up by 307%. The Chesapeake Bay Bridge-Tunnel project was responsible for much of that. A 72% jump in lettings in Tennessee also helped pull up the South's rating.

The Middle Atlantic states give the 15% over last year mark for the country a lot of help by going 56% over their 1959 level in awards. New York is up 93% and Pennsylvania 100%. The Narrows Bridge awards helped to boost the New York figure.

The Middle Atlantic states and Far West states are the only areas to surpass high levels for third quarter totals of the past four years.

In 1958 the Middle Atlantic states let $557 million worth of contracts in the first three quarters. So far this year their total is $613.5 million. Last year awards were $394.3 million.

The Far West states put out $492.4 million worth of work in the first nine months, as compared with $415.8 million in the same period in 1958 and $343.4 million in 1959. The heaviest increases over last year's performance came from California—59%; Oregon—63%, and Washington—76%.

There is no great indication that the third quarter's increase means that many states took advantage of the Bureau of Public Roads invitation to obligate in the third quarter all the funds that BPR had scheduled for the last half of 1960. Many of the state highway departments have been catching up with their schedules.

What the federal-aid bridges are made of:

Bureau of Public Roads data on projects authorized during 1957, 1958 and 1959.

System	No. of Bridges			Length of Bridges in Miles			Cost of Bridges in units of $1,000.00			Percentages By Length			By Cost		
	Conc.	Steel	P. Conc.	Conc.	Steel	P. Conc.	Conc.	Steel	P. Conc.	Conc.	Steel	P. Conc.	Conc.	Steel	P. Conc.
Primary	1,696	841	219	34.332	40.313	10.847	91,194.7	147,838.8	31,324.2	40	47	13	33.8	54.6	11.6
Secondary	4,512	980	369	83.758	43.737	10.283	114,275.4	91,931.3	21,555.4	60.8	31.8	7.4	50	40.5	9.5
Urban	244	284	50	5.921	21.019	2.264	40,579.9	125,887.7	11,937.9	20.4	72	7.6	22.8	70.5	6.7
"D" funds*	663	104	82	11.118	3.718	2.701	22,091.7	24,345.6	7,639.5	49.5	38.5	12	41	45	14
Interstate	2,524	1,588	648	44.321	75.2	23.784	238,004.1	605,078.2	130,443.5	30.9	52.5	16.6	24.6	62	13.4
Grand Total	9,639	3,696	1,368	179.450	188.987	49.829	506,305.8	995,681.6	202,900.5	42.9	45.3	11.8	29.7	58.4	11.9

* Emergency federal highway aid funds voted in 1958

Concrete Bridges Outnumber Steel

Reinforced concrete bridges outnumbered steel bridges almost three to one on federal-aid projects authorized by the Bureau of Public Roads in 1957, 1958, and 1959.

Despite concrete's lead in numbers, the steel bridges' total cost was twice that of concrete and the total lengths of bridges were almost the same for both materials (see table).

Prestressed concrete bridges authorized during that three-year period accounted for slightly less than 10% of the total number of bridges and slightly more than 11% of both total value and total length.

Of 14,703 bridges BPR authorized, 9,639 were concrete, 3,696 were steel and 1,368 prestressed concrete. The three-year total length is 418.26 miles. The bridges are valued at $1.7 billion, exclusive of engineering and right-of-way costs.

Reinforced concrete was the most popular material for secondary roads. The 4,512 concrete bridges built for these routes account for 60% of the total length and almost five times the number of steel bridges in that category. Despite this lead, reinforced concrete used up only half the money going for secondary highway bridge work.

Steel was in front numerically only in the urban highway program. Although it had only a 20% edge over reinforced concrete, steel racked up 72% of total length and 70% of total costs in this category.

Although steel was used in fewer than one-third of the bridges in the Interstate program during the past three years, it was responsible for more than half the total length and for 62% of total construction costs.

Prestressed concrete made its best showing in the Interstate program, where it was scheduled for construction of about 15% of the authorized bridges.

Heaviest use of concrete was in the states between the Mississippi River and the Rockies, where the totals were 4,003 reinforced concrete bridges, 1,261 in steel and 454 of prestressed concrete. Texas leads the concrete list with 1,294 bridges.

The same high level of highway work in the states between the Mississippi and the Rockies that enabled that area to lead in concrete bridges also brings it out front in construction of steel bridges. Missouri leads the country with 288 steel spans, more than half of them going into its secondary roads system. Pennsylvania ranked second in steel with 212 bridges.

The Mississippi-to-the-Rockies area also led in construction of prestressed concrete bridges during the three-year period, 454 of them. This lead can be attributed to the 174 going up in Iowa, where 102 were authorized for the state's secondary system. Florida is credited with 118 prestressed bridges and Texas with 115. Prestressed spans play an important role in Florida's Interstate program, accounting for 85% of the length of its Interstate bridges.

The New England states have the fewest prestressed concrete bridges for the three years of BPR's report, only 39. Eleven of the nation's 50 states have no prestressed spans listed for the 1957-1959 period. Seventeen states have none authorized for Interstate projects. Less than half the states using prestressed for Interstate work are putting more than 20% of their Interstate bridge money into it.

Two Utilities Eye Corps Dams

A federal flood control project in Pennsylvania with no authorization for hydroelectric potential will be used for two pumped-storage generating plants and a run-of-the-river power plant if preliminary ideas of two non-federal organizations come to fruition.

Pennsylvania Electric Co. and the Warren Electric Cooperative, Inc., have asked the Federal Power Commission for a permit to study the power potential of the Kinzua Dam project, under construction by the Corps of Engineers on the Allegheny River upstream from Pittsburgh.

Both applicants concur in the Corps' report that power production at Kinzua is incompatible with the primary purpose of flood control and downstream flow regulation. However, they claim that power can be generated economically by adding pumped storage to run-of-river flow.

Each of the groups would build a pumped storage plant to a proposed reservoir 700 ft higher, on top of a nearby hill. Pennsylvania Electric would pump during off-hours from Allegheny River Reservoir, the pool to be created behind Kinzua Dam, to a proposed reservoir on top of a nearby hill. The water would make the downhill return trip through the pump-turbines during high-demand hours. Plant capacity would be somewhere between 75,000 and 300,000 kw.

Warren Electric Cooperative would build a run-of-river plant at Kinzua Dam with a capacity of about 17,500 kw; a possible re-regulating dam and a second powerhouse 2.5 miles downstream from Kinzua that could raise output to somewhere between 30,000 and 75,000 kw; and a pump-generating plant with a capacity between 50,000 and 125,000 kw.

Pennsylvania Electric would operate all the power facilities and supply power to the cooperative unit and the 12 other cooperatives allied with it in the Pennsylvania Rural Electric Cooperative Association.

Although federal authorization and plans include no power production at Kinzua Dam, the work authorized includes installation of two penstocks for possible future use. These would probably be used for the cooperative unit's power plant if that project should be built.

Prestressers Move to Mechanize

- **PCI convention takes steps to help young industry with problems of promotion and production.**
- **Designers and builders detail spectacular new applications in U. S. and abroad—Russia included.**

More than one thousand enthusiasts of prestressed concrete convened in New York City last week to take stock of the infant industry, analyze current problems and plan for the future. They also came to get the details of several spectacular prestressed projects here and abroad.

The occasion was the Sixth Annual Convention of the Prestressed Concrete Institute. The theme was "Prestressed concrete—key to creative architecture and imaginative engineering."

The producer members of the organization, confronted with stiff competition from other structural materials, planned an aggressive promotion campaign. This includes an advertising program for which the producers will be assessed.

The current status of the industry was summarized in the opening session by Frederick S. Merritt, Senior Editor, ENGINEERING NEWS-RECORD. He pointed out that the greatest growth appears to be in production of prestressed plank, which goes almost entirely into buildings, whereas beam-and-girder production is falling off (see p. 34).

• **Mechanization starting**—In recognition of this challenge, the industry is beginning to mechanize plank production. Harry Edwards, president, Leap Concrete, Inc., Lakeland, Fla., described a new machine—the Dodd extruder—developed for this purpose. Robert Stoelker, chief engineer, Formigli Corp., Berlin, N. J., described another—the Schaeffer extruder (ENR May 26, p. 34, and Nov. 24, 1955, p. 40). Both machines are used for continuous, long-line production of hollow-core prestressed plank.

The Florida Prestressed Concrete Co., Tampa, Fla., reported development of a machine for making railroad ties. The process is completely automatic. It can turn out a tie in nine seconds.

Russian progress with mechanization was outlined by Prof. V. V. Mikhailov, of the USSR Academy of Construction and Architecture, Moscow. Soviet engineers have developed several new production techniques for use with continuous concrete prestressing. These involve a combination of vibration and other processes and are called vibropunching, vibrorolling, vibropressing, etc.

For example, vibropunching is utilized in machine production of waffle slabs: A new type of machine, called a copy feeder, delivers the required quantity of concrete on a gantry conveyor belt, which carries it to a moving bed, where it is spread in a thin layer; the vibropunch squeezes the concrete into a even thinner layer, forcing some of the mix upward to form ribs in perpendicular directions.

To reduce wire breakage during continuous prestressing, the Soviet engineers are supplementing mechanical tensioning with stretching by electrical heating. The electrothermal process permits use of smaller forces in placing pretensioning wires. Details of this process were given by Prof. B. G. Skramtaev, also of the USSR Academy of Construction and Architecture.

• **Prestressed pavements**—Prof. Mikhailov also disclosed that the Russians are experimenting with precast slabs, pretensioned in two directions, for airport runways. Other experiments abroad with the same objective were described by Prof. Daniel C. C. Vanderpitte, University of Ghent, Belgium.

Probably the most significant of these are the pavements at the Algiers and Brussels airports. The Algiers runway has abutments consisting of curved concrete slabs loaded with earth. The connections between them and the prestressed slabs are elastic, to reduce variations in thrust with temperature change (ENR Oct. 27, 1955, p. 37). The runway at Brussels differs principally in the abutments, which have to withstand the full thrust from the prestressed slab under temperature change.

An experimental slab taxiway at the Brussels airport also is of interest. It is made of factory precast parallelograms, pretensioned longitudinally. They are set on the ground with the long axis parallel to the runway center line and with slanting joints of adjacent slabs staggered. Transverse post-tensioning ties them together and insures unity of action of the whole pavement Prof. Vanderpitte also pointed out that many post-tensioned beams in Belgium, Great Britain and Germany have the cables outside the members, enclosed in mortar. He enumerated several advantages of the technique, including elimination of conduit for encasing the tendons and thinner I-beam webs. However, A. J. Harris, London consulting engineer, called attention to the danger of corrosion if the mortar should crack.

A spectacular bridge, now under construction across Lake Maracaibo, Venezuela, was described by Prof. Riccardo Morandi, of the University of Rome, winner of a design competition for the project. The 57-ft-wide structure will be nearly six miles long. All spans will be constructed of prestressed concrete, including five of 771 ft and two of 525 ft. The 771-ft spans will receive intermediate support from diagonal struts and cables extending from the piers (ENR June 13, 1957, p. 28, and Oct. 22, 1959, p. 26).

Arthur R. Anderson, partner, Anderson, Birkeland and Anderson, Tacoma consulting engineers, proposed a new series of standard girder shapes, which he believes will be more economical than those now in use. They would have a top flange 48 in. wide, tapering from 4 in. at the web to 1 in. at the edge. Webs are 5 in. thick.

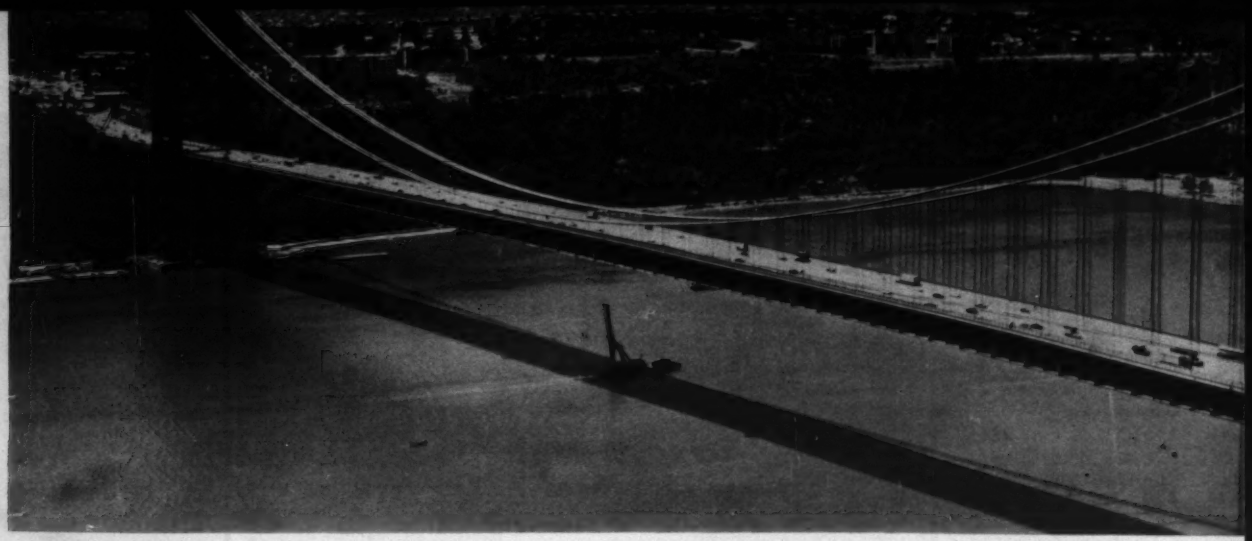
The only variable is the depth. It ranges from 24 to 72 in. in 6-in. increments.

• **Tough competition**—John M. Kyle, chief engineer of the Port of New York Authority, advised American prestressers to develop new and different uses for their products.

"I think it is significant," he said, "that where prestressing has been used to replace conventional construction, the development of newer techniques and design theories applied to conventional construction have resulted in lower costs. However, where specialized problems are encountered, prestressed concrete has often proved to be the only valid solution."

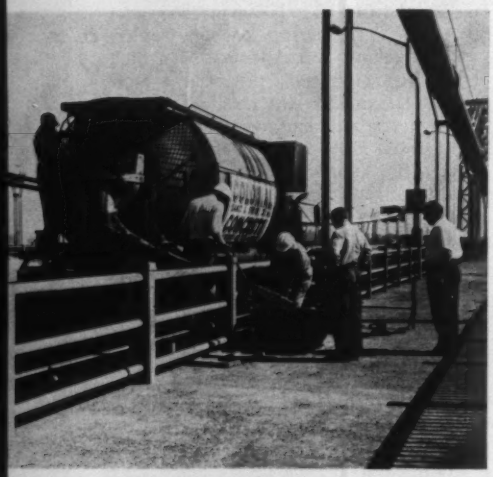
Mr. Kyle also described briefly jurisdictional labor battles in the New York metropolitan area that were holding back use of prestressed concrete. Also, corridor discussions indicated that demands of construction labor for field wage rates in the shop were discouraging investment in new prestressing plants.

The PCI elected as president Jacob O. Whitlock, Midwest Prestressed Concrete Co., Springfield, Ill. Robert J. Lyman, Atlas Structural Concrete, Inc., El Paso, Texas, is the new vice-president, and Robert A. Matthews, Precast Industries, Inc., Kalamazoo, Mich., secretary-treasurer.



Double decking of the George Washington Bridge moved nearer to completion last week when

Placing Concrete: Phase Two of



1. Concrete is fed through upper deck . . .

Another important step toward completion of the $183-million double decking of the George Washington Bridge was taken last week when workmen began casting concrete for the structure's six-lane lower roadway.

The concreting is being done by Horn Construction Co. of Merrick, L. I., as subcontractor for Bethlehem Steel Co Bethlehem completed the first phase of the work—erection of 13,875 tons of structural steel—in mid June.

In the next five weeks Horn will place some 5,000 cu yd of lightweight concrete across that steel. The concrete, which reaches from anchorage to anchorage, will be 4½ in. thick with a 1½-in.-thick wearing course of asphalt.

The George Washington Bridge, which spans the Hudson River between New York and New Jersey, is the third longest suspension bridge in the world—and is probably the busiest. Last year it carried more than 38 million vehicles. This year that figure will be bigger, despite the major alteration being made both on the bridge itself and its approaches.

The problem for any contractor working on or near the bridge is to do his work with a minimum of traffic dislocation. Bethlehem Steel erected the lower deck framework entirely from below the upper roadway. Prefabricated sections were lifted into position from the ground or the river below by special hositing trolleys mounted beneath the upper deck. Horn, faced with a similar problem, is using the upper deck—but only for the delivery of concrete.

Work on the approaches at both ends of the bridge makes access to the lower deck from those points virtually impossible. Therefore ready-mix trucks

2. to hopper then to loader on lower deck.

3. Loader delivers concrete to work area where . . .

4. workmen spread

concreting started on second deck.

New Deck

stop in the slow lane long enough to discharge their loads into a funnel set in the hole cut through the sidewalk. From the funnel, concrete falls by gravity through a pipe to a double bin storage hopper set up on the lower deck. Front end loaders pick up the concrete from the hoppers and carry it back to the working area, where they dump and back-drag the material. A hand drawn vibrating rail screed and wood floats are being used for finishing the surface.

When the lower deck of the bridge is opened in 1962 the capacity of the structure will be increased by 75%. The original structure was completed for the Port of New York Authority in 1931 at a cost of about $60 million. It was designed by O. H. Ammann, who is serving as consultant on the current work. Mr. Ammann designed the original structure to carry a lower deck.

the material with help of a vibrating screed.

Counties Join in Flood Control

Seven counties in the Greater Cleveland area will spend over $5 million for flood control, if they accept the content of a new engineering study.

The project would reduce the threat of flood damage from the Cuyahoga, Chagrin and Rocky rivers. Damage in these river basins now amounts to over half a million dollars a year.

Proposed by the Stanley Engineering Co., a firm retained by Cuyahoga and six neighboring counties, the plan calls for construction of a dam and reservoir, improvement of river channels, flood plain zoning, and the like.

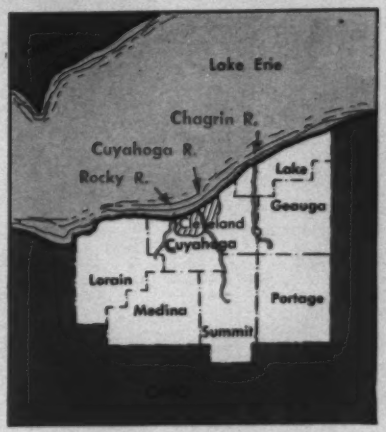
A dam and reservoir proposed for Tinkers Creek would cost $3.8 million.

Widening and deepening of the Chagrin River channel and protecting it with jetties would take about $1.2 million.

Deepening the Rocky River at the mouth, a jetty into Lake Erie and general improvement of the channel would cost about $194,000.

Communities located in the three river basins were urged to adopt flood plain zoning to keep residences and other types of construction out of areas subject to floods.

The counties involved are Cuyahoga, Lorain, Medina, Summit, Portage, Geauga and Lake.



CLEVELAND area studies flood control.

PNYA—On Rebound—Woos Rails

In a surprising reversal of policy, the Port of New York Authority has offered to purchase, renovate and run a commuter rail line between Newark, N. J., and New York City. The Authority also agreed to abandon bitterly contested plans for construction of a $220-million jet airport in New Jersey's Morris County.

The Authority, which operates all the major airports in the Metropolitan New York Area, has for years insisted that the Morris County airport is a necessity. For an even longer time the Authority has refused to even consider handling a commuter rail line, claiming that both legal restrictions on its operations and obligations to its bondholders made such a course of action impossible.

Now, Austin J. Tobin, executive director of the Port Authority, says it is willing to take over the Hudson and Manhattan Railroad at an estimated price of $20.5 million and to put an additional $49 million into rehabilitation of railroad properties and the purchase of 300 new cars. Mr. Tobin qualified his offer by listing certain conditions under which the Authority would be willing and able to make the purchase.

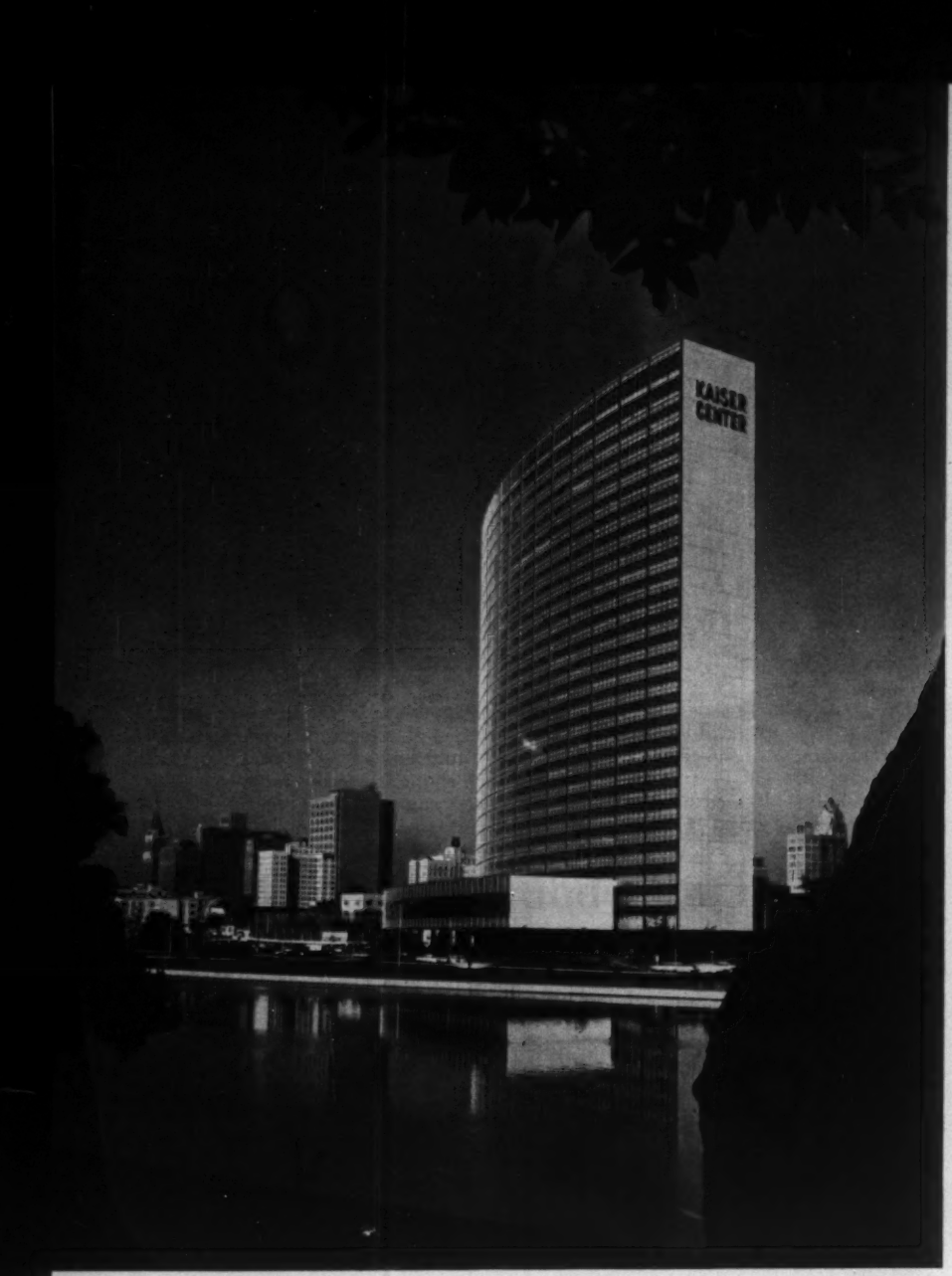
One is that the purchase of all H&M properties must be "realistic." The other requirements involved rerouting of passengers trains on three railroads so that New York bound fares will be discharged at the H&M terminal in Newark rather than at ferries on the Hudson River.

Herman T. Stichman, trustee for the railroad, admitted that he would be interested in discussing the proposed sale with a Port Authority representative but said that the price quoted by Mr. Tobin was far from acceptable.

The decision to abandon plans for the airport was not entirely in accordance with Port Authority wishes. However, Morris County is outside the area in which the authority is permitted to operate. This means that Authority would have to get approval for the project from both the New York and New Jersey legislatures. The New Jersey legislature recently voted unanimously to oppose the project. In a later development, some 1,100 acres of the area in which the Authority hoped to construct the airport was last week given to the federal government as wildlife preserve.

Confronted with these obstacles, the Port Authority had little choice but to forget the site and look elsewhere. The Authority had considered nine other possible locations for the jet airport, but had regarded all of them as impractical. No further plans for airport construction were made known by Mr. Tobin.

The policy switch was revealed by Mr. Tobin during three hours of testimony before a New Jersey State Senate committee. The State Senate is investigating the operations of the Port Authority, largely, it is said, to forestall further attempts by Representative Emanuel Celler (D., N. Y.) to conduct such an investigation on a national level.



Kaiser World Headquarters

Designed first as a world headquarters, Kaiser Center in Oakland, Calif., also serves as a showplace of Kaiser Industries Corp. products and provides downtown Oakland with an attractive shopping center as well.

The center is dominated by the curved bulk of its 28-story office building. With 820,000 sq ft of useable office space, it is the largest office building west of Chicago. At ground level, a three-story department store occupies a portion of the site and three acres of landscaping cover a five-deck, 1,200 car public garage. Ground and second floors of the office building contain stores, a company cafeteria and a 400-seat auditorium available for public use. Including the department store, the center has 173,000 sq ft of shopping space.

When planning for the center began in 1955, the Kaiser Corp. expected to lease out a portion of the office tower. Anticipating continuous growth and to simplify building design, the organization decided against leasing any of the building's space to other office tenants. At present, all 60 affiliated companies and subsidiaries—a total work-population of 2,500—are housed in the building. But the company has provision in the center for a 4,000 population.

There are three basement floors below ground level. The lowest—35 ft below grade—is a 5-ft-thick reinforced concrete floating slab foundation.

The steel framed office structure is a 390-ft-high curved tower with floors 56 ft wide and 420 ft long. On the concave side of the building, a 55x85 ft service wing carries 17 high-speed elevators and part of the mechanical equipment. Two other interior toilet and mechanical cores are spotted at quarter points along the building length.

In addition to the 17 high-speed elevators there are two feight elevators and a special freight conveyor that operates between a loading dock and the first basement.

Two separate distribution systems fan out from a mail and wire center on the 11th floor. A pneumatic tube network carries wire messages to each floor. Mail is delivered on a loop conveyor running between the basement and 27th floor. Mail from the 11th floor center is dropped off automatically at any floor designation.

The main tower frame consists of four column lines cutting the building into four strips of bays along its length. Outside bays measure about 20x30 ft; the single line of interior bays is larger at about 25x30 ft.

Interiors are keyed to a building module, but because the building is an arc, the usual rectangular module is replaced with module lines developed as radii of the structure's curve spaced about 5 ft apart.

Company products turn up everywhere in the center from the precast panels on the tower ends and department store facade—Domolite aggregate—to ceiling panels and electrical cable—aluminum throughout.

Largest single aluminum application is in extrusions and sheets for the curved exterior tower walls. Gold alloy panels are set in natural finished aluminum frames. Inside the building, aluminum paneled ceilings are given one of four key colors, repeated throughout that level in walls, flooring and furnishings.

Each floor is divided into 17 temperature control zones with two or three thermostats in each sector. These control flow of warm or chilled water through steel pipe grids in the radiant ceiling system. The perforated aluminum ceiling pans radiate or absorb heat as required. In addition, fresh air enters offices through diffusers hidden behind the ceiling pans and through vents in perimeter offices. Exhaust air is pulled out through perforations around the lighting fixtures then fed outside the building.

The office building windows—following the current trend in handling windows by the acre—are washed by a spider rig traveling up and down the building facade on tracks recessed in the aluminum column covers.

Welton Becket and Associates, Los Angeles, are the architects and engineers for the Kaiser Center. Murray Erick Associates, Los Angeles, are the structural engineers. Robert E. McKee General Contractors Inc., Dallas, is the builder.

*Now...***TEN-TEN** *is the word for low-cost earthmoving!*

Watch for them! Already, the first members of John Deere's "New Generation of Power" are proving their built-in economy and high work capacity on earthmoving jobs. Powered by all-new John Deere-built 4-cycle, 4-cylinder valve-in-head engines operating at speeds to 2500 rpm, new Ten-Ten Crawlers deliver the versatile performance that loading, dozing, and other construction jobs require. High horsepower per pound plus lugging ability, gives the Ten-Ten plenty of capacity for continued rough work on roads, dams, or building-site preparation. A direction reverser-equipped transmission (optional) provides time-saving maneuverability and handling ease. Gasoline and Diesel power are available, with a wide choice of dozers, backhoes, loaders, and other working equipment.

Get the facts on the new John Deere Ten-Ten Crawler from your John Deere Dealer. He'll provide information, too, on the John Deere Credit Plan and long-term leasing. Check the yellow pages for your nearest dealer.

JOHN DEERE

LOADERS
BULLDOZERS
BACKHOES
AND
EARTHMOVING
EQUIPMENT

JOHN DEERE · 3300 RIVER DRIVE · MOLINE · ILLINOIS

ICBO Management Gets Vote of Confidence

The members of the International Conference of Building Officials, at its 38th annual business meeting last month in Colorado Springs, affirmed their support of the Conference's "management and the duly elected officers and directors" by adopting a resolution giving them a vote of confidence.

The resolution was occasioned by criticism set forth in a letter sent last summer to all of the Active Class A members (i. e. cities and counties) of the Conference by G. E. Morris, just prior to his retirement as superintendent of building for the City of Los Angeles.

Mr. Morris' charges and the fact that they were published (ENR July 7, p. 28) were considered to "seriously damage the national prestige of the Conference," in the words of the resolution. The resolution, therefore, after noting the "growth record of the Conference under the present management," expressed "great respect for and confidence in the many building officials who have served the Conference in the past" and emphasized the members' "confidence in the integrity of the present management."

The City of Los Angeles' Active Class A membership, previously represented by Mr. Morris, was represented at the meeting by John C. Monning, who had been appointed general manager and superintendent of building for the Los Angeles Department of Building and Safety on August 25.

Election of officers at the ICBO meeting resulted in the naming of P. M. Roberts, Boise, Idaho, as president; Lawrence A. Lane, Oakland, Calif. as first vice-president; and Ralph F. Spencer, San Bernardino Calif., as second vice-president. Hal Colling was reappointed managing director; Mrs. Hal Colling director of publications; T. H. Carter technical director; and Bruce Randall director of education and field.

Industry Groups Sponsor New Construction Courses

The construction industry is continuing to encourage colleges and universities to establish courses in construction management. Two such courses come into being this year; one at the School of Business of Texas Christian University, Forth Worth, the other at Wayne State University, Detroit.

The TCU course, which will start next spring, is sponsored by the Home Builders Association local.

The Wayne State University course, starting this fall, is sponsored by the Builders' and Traders' Exchange of Detroit. It is designed for owners, managers and executives in the construction industry.

Around the World . . .

• **Buried history**—All but 25-sq-ft of the country's oldest stretch of concrete street will be buried under a paving of asphalt. The strip, on East Columbus Ave. in Bellefontaine, Ohio, was paved in the 1890s. The Chamber of Commerce wanted to save it, but the City Council is unwilling to spend $8,000 for restoration. A 5x5-ft block will be preserved in place.

• **Bay span gets first steel**—Yuba Erectors, a division of Yuba Consolidated Industries, has placed the first steel on an approach span of the $14-million Benicia-Martinez bridge, which will link Solano and Contra Costa Counties across Carquinez Straits in upper San Francisco Bay. The structure is of deck truss design with a total length of 6,215 ft.

• **School fire safety**—Pennsylvania school authorities have spent almost $8 million on school fire safety projects since the Commonwealth's drive to eliminate school fire hazards started in 1958. The State Department of Public Instruction said 570 projects have been certified for full or partial payment with state funds.

• **San Francisco tower**—A $7-million, 23-story luxury apartment building will be constructed atop Nob Hill in San Francisco. Architect, Angus McSweeney; structural engineer, Bryon L. Nishkian; general contractor, Cahill Construction Co. All are from San Francisco.

• **Monorail moves ahead**—Construction of the $3.5-million monorail to serve Seattle's Century 21 Exposition is scheduled to start next April. Howard S. Wright Construction Co., Seattle, will build the one-mile structure.

• **Bridge approach bids**—California's Division of Highways will open bids this month on $5.1 million worth of work on the Solano County Freeway approaches to the Benicia-Martinez Bridge. Nine traffic separation bridges will be built in this section.

• **U. S. S. R.-Ghana pact**—Soviet rubles and know-how will go to Ghana under terms of a recent pact. The Soviets, according to Tass, will cooperate with the new nation in a number of ways, including construction of big power dams and plants for the manufacture of construction materials.

• **Graduate engineering**—Polytechnic Institute of Brooklyn's new $1.6-million Graduate Center is now under construction at Farmingdale, N. Y. The main building will contain 53,000 sq ft and will include 12 laboratories for research in aerospace engineering, electrial engineering, physics and electro physics.

• **They must like it**—The Maryland State Roads Commission plans to build an additional six miles of continuously reinforced concrete pavement on the Baltimore-Harrisburg expressway; 3.5 miles of pavement of this type were built last year. A 1.5-mile long section is planned for the future on the Capitol Beltway around Washington.

• **A family of beams**—The British Prestressed Concrete Delevopment Group, in cooperation with the Ministry of Transport, has designed a range of standard prestressed concrete bridge beams as a means of saving design time throughout the nation. Forty-five precast concrete companies have agreed to manufacture the beams to order.

• **Rooftop merry-go-round**—Hopes still exist that a large revolving restaurant and observation platform atop a tower about 500 ft high will be built for Seattle's Century 21 Exposition, scheduled for 1962. Cost is estimated at $2.2 million. Exposition officials failed in their first attempt to secure financing from the Board of King County Commissioners and are considering turning to private financing. Preliminary engineering was done by John Graham & Co., architects-engineers.

• **For members only**—American Road Builders Association members this month will nominate candidates for the group's newly established National Award. The award will be given annually to an ARBA member who has made an "outstanding contribution to highway progress." Selection will be made after December 1 by a three-man committee.

• **Highway to Suez**—For the first time in recent years Egypt is inviting international bids on highway projects. The Administration of Roads and Road Transport has advertised for bids on a highway between Port Said, at the north end of the Suez Canal, and El Matariah, in the Nile delta.

SURE IT'S DRY...

And it's dry more than 15 feet below the level of the river, just a few feet away. What's more, there's an open end ramp that provides easy access to the excavated area. The Sioux River Diversion Dam is well on its way to completion, and the work is in the dry. This is the kind of thoughtful planning and efficient dewatering that is engineered into all STANG-dewatered projects: quick, clean, economical, and always dependable. Anywhere, anytime, be sure—call STANG.

JOHN W.

STANG

CORPORATION

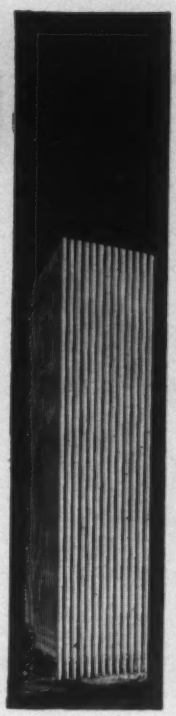
8221 ATLANTIC AVE., BELL, CALIFORNIA

ENGINEERS AND MANUFACTURERS OF DEWATERING EQUIPMENT, WELLPOINTS AND PUMPING SYSTEMS • DEWATERING PLANNING—EQUIPMENT—SERVICE

OMAHA TACOMA MOBILE TULSA MINNEAPOLIS ST. PETERSBURG

Contractor—Foley Bros., St. Paul, Minn.

F I R



Owner: United of America Building, One East Wacker Drive, Chicago, Illinois. Architects and Engineers: Shaw Metz & Associates, Chicago, Illinois. General Contractor: A. L. Jackson Company, Chicago, Illinois. Steel Fabricator and Erector: American Bridge Division, United States Steel.

ST USE MAN-TEN (A 440) HIGH STRENGTH STEEL IN A SKYSCRAPER SAVES $45,000!

The three basement floors and the first 23 floors of the 40-story United of America Building, Chicago, which will be the Home Office of the United Insurance Company of America, will have USS MAN-TEN (A 440) High Strength Steel 14" WF columns. These will range in weight from 426 to 158 pounds per foot. The remaining columns above the 23rd floor will be structural carbon steel, ASTM A-7, 14" WF's ranging in weight from 287 to 78 pounds per foot.

When compared to a design using structural carbon steel throughout, the design using high strength steel in the columns up to the 23rd floor resulted in a weight reduction of approximately 800 tons of steel and savings of about $45,000 in the cost of the entire erected frame.

The decision to use high strength steel up to the 23rd floor only was based on consideration of deflection limitations.

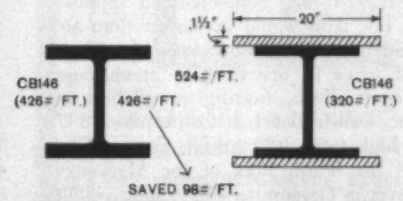
The use of USS MAN-TEN (A 440) High Strength Steel reduced the depth and weight of the columns and eliminated the need for cover plates on many of them, thus reducing fabrication costs. Architectural details were simplified and considerable space was saved around the columns.

Total steel used: 2,300 tons of USS MAN-TEN (A 440) Steel; 3,915 tons of ASTM A-7 Structural Steel; 88 tons of high strength bolts: Grand total 6,303 tons. The 2,300 tons of MAN-TEN (A 440) Steel did the job that would have required 3,100 tons of A-7 Steel. Thus, there was a weight saving of 800 tons in these columns or 25.8%. When weight savings exceed 16%, it is usually more economical to use USS MAN-TEN (A 440) High Strength Steel.

Up to ¾" thick, the minimum yield point of USS MAN-TEN (A 440) Steel is 50,000 psi . . . with somewhat lower values for thicker sections, yet still higher than structural carbon steel. It is well suited to bolted and riveted construction and has been widely used to save weight in bridges and construction equipment. For welded construction, USS TRI-TEN High Strength Steel is recommended because of its superior welding properties and equally high strength. For more information, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS, MAN-TEN and TRI-TEN are registered trademarks

How weight was saved on first four stories.



(Left) USS MAN-TEN Steel. An interior column from 3rd basement. Simple 14" WF section (CB 146) weighing 426 pounds per foot. It was possible to omit cover plates on 50% of all columns.

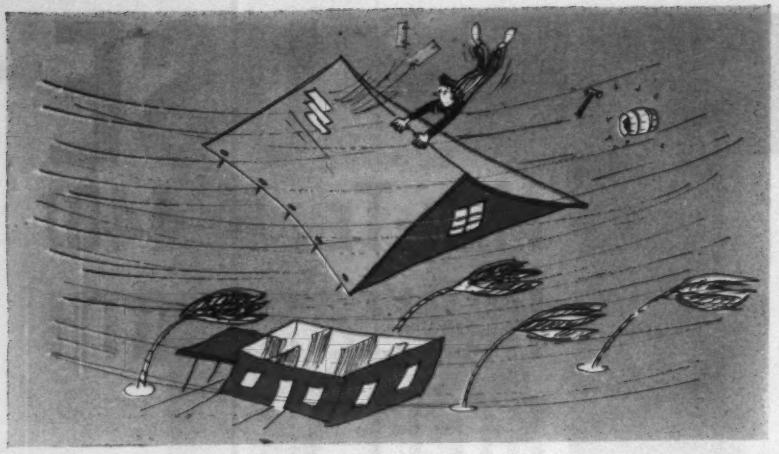
(Right) If ASTM A-7 Steel had been used, 14" WF section (CB 146) weighing 320 pounds per foot would have needed reinforcement of two cover plates 20 inches wide x 1½ inches thick. Total weight 524 pounds per foot. High strength steel saved 98 pounds per foot.

USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

This mark tells you a product is made of modern, dependable Steel.



How Not to Resist Hurricanes

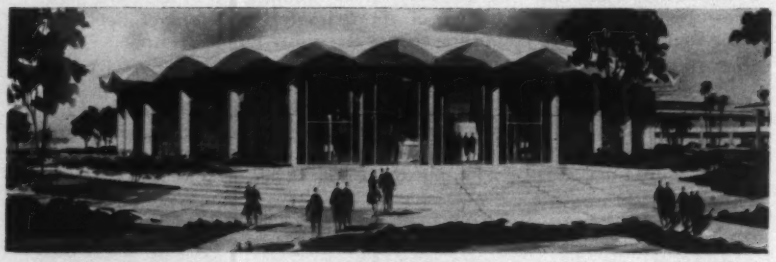
Penny-pinching and carelessness: Those were the major causes of the wind damage inflicted by Hurricane Donna, according to a five-man study team that investigated the building wreckage in Miami and its suburbs.

The engineers estimated the total construction savings representing the difference between safety and failure at about $25 per house in most cases.

Some examples of how not to build a hurricane-resistant structure:

- Break the bond between the concrete lintel cast on top of a masonry wall by placing tar paper over the masonry cores.
- Connect the roof anchor straps to the roof rafters with two eight-penny nails instead of three sixteen-penny nails, as required by the Dade County building code.
- Anchor 2-in. tongue and roof sheathing to its supporting trusses with only one thirty-penny nail at each joint. (A huge section of roof on the building with this inadequate anchorage sailed away in one big piece.)

No major building code revisions appear to be called for. But Dade County building officials indicate they may recommend stiffer regulations on house appendages like carports and porches.



Campus Gets Pleated Dome Roof

A 150-ft-dia circular lecture hall featuring an accordion-pleated domed roof will be constructed at the University of California at Santa Barbara.

The 2-in.-thick roof is a folded plate, thin shell concrete design. Sections of the roof will be cast in place on reusable wedge-shaped forms. Each segment of the dome will be Y-shaped in cross section; the base of the Y will carry the bulk of the structural load and will rest on 24x10-in. reinforced concrete columns.

The 36 roof segments will cantilever 10 ft beyond the building walls. Roof beams will radiate out from a 20-ft-dia reinforced concrete compression ring; the beams will taper in depth from 18 in. at the column line to 12 in. at the compression ring. A tension ring at the column line will be a continuous band of flat steel inside an 8-in. concrete beam that girds the structure.

Exterior walls located between the columns will be made of cinder-concrete block. Slits of glass, 12 in. by 16 ft, will be placed on each side of the block walls at the columns and will serve as windows for seminar and rest rooms.

Architect for the building is Charles Luckman Associates of Los Angeles. Richard Bradshaw of Van Nuys, Calif., is structural engineer.

U. S. to Study Pollution In Chicago-Area Waters

A six-year anti-pollution study of U. S. jurisdiction of the Great Lakes Basin-Illinois Waterway has been announced by Surgeon General Leroy E. Burney.

In the first phase of the study, to get under way immediately, PHS's Water Supply and Pollution Control Division will inventory all points of inflow into the Chicago River, Sanitary and Ship Canal, the Calumet-Sag Canal, and their tributaries.

All municipal and industrial wastes discharged into these waterways will be measured and analyzed. Since these waters form the origin of the Illinois Waterway—connecting link of the Great Lakes Basin and the Mississippi River, the effect of such wastes on the waterway will also be investigated.

Methods of improving water quality will be studied in an effort to aid development of a comprehensive plan to control and prevent pollution.

First phase of the study is being pushed ahead so that data gathered might assist a Supreme Court Special Master now conducting hearings on cases disputing the use of Lake Michigan waters (ENR Mar. 3, p. 24). The dispute is a complicated affair putting Chicago, which wants to divert more water, against several lake states.

Hydro Project to Have Highest Rockfill Dam

Public hearings will be held later this month on the proposed $114-million New Melones water and power project on California's Stanislaus River.

A 600-ft-high rockfill-type dam is part of the project, which also includes a 150,000-kw enclosed power plant and a 1,252-ft-long concrete-lined spillway.

The dam would be higher than any fill-type dams now in existence. Highest dams in this class at present are: Trinity Dam, nearing completion on the Trinity River in California—a 537-ft-high rock and earthfill; Cougar Dam on the South Fork of the Mackenzie River in Oregon —a 435-ft-high rockfill. Oroville Dam, an earthfill, proposed as part of California's big Feather River water plan, would top all at 730 ft.

Preliminary studies give the volume of New Melones at about 14.3 million cu yd—11 million cu yd will be rock.

Length of the dam at its crest will be 1,500 ft, its width at that point will taper to 20 ft from a base of 2,400 ft.

An unusual arrangement between the Corps of Engineers and the Bureau of Reclamation would permit the Corps to build the proposed dam and the Bureau to operate irrigation and power features in coordination with existing Central Valley Project features.

Colorado Department of Highways Colfax-Federal Interchange, Denver, Colorado. A 4-span, continuous "T" girder structure with two roadways 44 ft in width, separated by a 4 ft raised median.

Designers: Ken R. White, Consulting Engineers, Inc., Denver, Colorado
T. V. Stradley, Head of Bridge Section
Contractor: Latimer Construction Company, Denver, Colorado

REINFORCED CONCRETE

continues to hold the line on construction costs

Denver's new Colfax-Federal Interchange, spanning U.S. Highways 36 and 40, is another outstanding example of the greater construction economy possible with reinforced concrete. Over 204 ft in length, this structure was completed at a total cost of only $5.90 per sq ft.

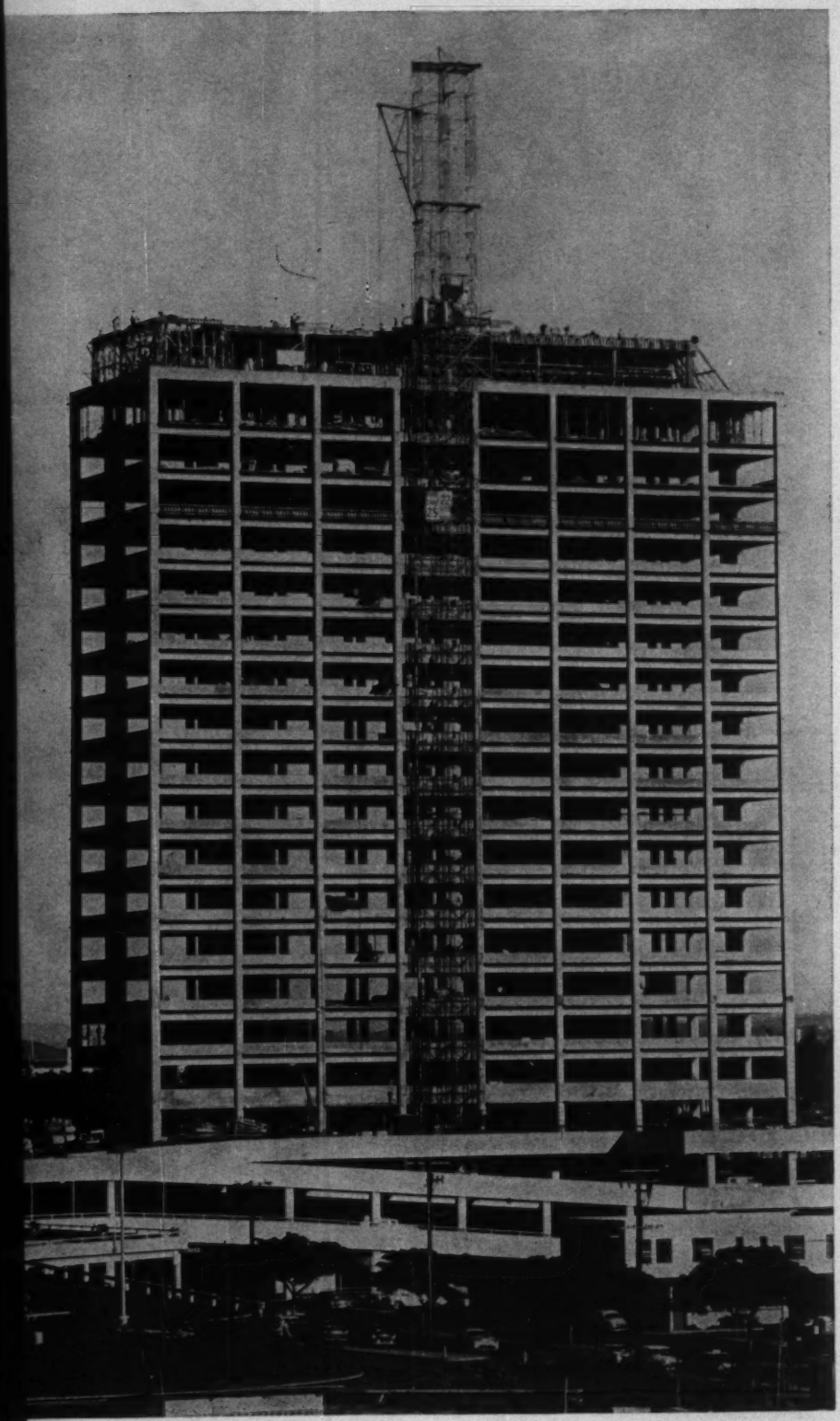
When compared with other construction materials, the over-all cost of reinforced concrete bridges, overpasses, and other highway structures is usually less. On your next project, be sure to consider reinforced concrete. Compare its many costsaving and timesaving advantages.

CONCRETE REINFORCING STEEL INSTITUTE
CRSI
FOUNDED 1924

Concrete Reinforcing Steel Institute
38 South Dearborn Street
Chicago 3, Illinois

15-6

Prestressed Concrete: The



Prestressed building, 24 stories high, is being built in Hawaii.

By Frederick S. Merritt

The first major structures to be constructed of prestressed concrete in the U.S. were completed ten years ago. Since then, an industry has been growing up around the technique.

How much has it grown? To find out, we asked engineers who pioneered this development how their present-day techniques compare with those they used five to ten years ago. We also asked prestressed concrete fabricators questions designed to portray the current status of prestressing as an industry.

Prestressing had been used in the U.S. before 1950 but not for all the beams and girders and floor slabs of major structures. Its principal use had been for pipe, tanks and domes—circular prestressing as opposed to linear.

What little linear prestressing was attempted was generally experimental and at best only for small portions of major structures. Outstanding examples were the prestressed floor slab John A. Roebling's Sons Corp. constructed in 1947 for its Chicago warehouse plus the prestressed deck that same company fabricated and erected in 1948 for a suspension footbridge across the Delaware at Lumberville, Pa.

• **First U.S. conference**—After the first major prestressed structures were erected in 1950, several more were completed in rapid succession. Prestressing techniques and design theory for most of these structures were different. Some engineers relied heavily on European experience with prestressing; but others preferred to explore new methods, because European techniques were based on low labor costs. Each job was a new experience.

In August, 1951, a conference was held at Massachusetts Institute of Technology to give prestressing enthusiasts an opportunity to share these experiences (ENR Aug. 23, 1951, p. 24). To this meeting came Bryan and Dozier to tell of their concrete-block beams; Baxter and Barofsky to describe Philadelphia's Walnut Lane Bridge; C. L. Johnson to report on the John R. Road crossing of

---

Senior Editor Fred Merritt has been a close observer of developments in prestressed concrete for the past 15 years. Author of numerous articles on prestressed structures, he prepared this survey of the industry for a presentation at the 6th Annual Meeting of the Prestressed Concrete Institute in New York City last week.

Infant Is Growing Up

Red Run Drain in Oakland County, Mich.; Middendorf and Panhorst to discuss the Arroyo Seco Bridge in California. Also, Blair and Thorsen described building applications; Coff and Friberg pavements; and Cummings, piles. In addition, 37 other speakers discussed a wide variety of pertinent subjects.

The conferees agreed that U.S. prestressers should develop their own techniques. At the same time, they feared that too rapid development might lead to failures that would discourage use of prestressed concrete.

"As engineers or architects," said Prof. J. B. Wilbur, head of the MIT Department of Civil and Sanitary Engineering, "we are not carried away by a new technique, however promising and exciting it may be. We know that its ultimate destiny will be determined by such realistic factors as structural performance and competitive bidding. And so we look to the future of prestressed concrete with conservatism as well as enthusiasm."

• **Looking ahead**—Several speakers urged early preparation of recommended practices, specifications and design standards, to stimulate use of prestressing and reduce the chances of failures due to inexperience. And the conference ended with passage of a resolution to this effect. But not before it had heard some realistic appraisals of the future for prestressed concrete in the U.S.

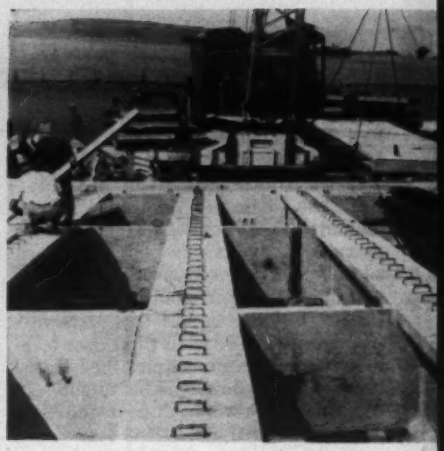
Predicted L. H. Corning of the Portland Cement Association: "By careful study of the merits and shortcomings of currently used methods, by modifications to fit our conditions, by addition of wholly new ideas, not one but several American ways will be developed. They will be keyed to our tempo of construction and to the relationship between labor and material cost. There appears to be no serious obstacle to economical construction of prestressed concrete structures for many purposes."

Postulated J. K. Gannett of The Austin Co.: "If a sufficient market can be developed for prestressed concrete buildings to justify establishment of plants which would be central to our expanding industrial areas, that would provide a strong impetus toward the use of this technique. One of the quickest ways to justify the establishment for such plants would be through the development of standard designs . . ."

Summing up, Rear Admiral J. F. Jelley, then chief of the Bureau of Yards and Docks, said: "At no time in this conference have I heard the adequacy of

Prestressed bridge three miles long spans Pensacola Bay, Florida.

1951—Post-tensioned bridge beams of concrete block span 30 ft.



1954—Pretensioned girders

prestress design questioned, but the subject of economy has been uppermost in your minds. . . . This conference has given me the feeling that we are on the threshold of a new era in construction very similar to the time fifty years ago when reinforced concrete was introduced. Unquestionably, we are in the initial stage of developing an important construction material—and one whose ultimate development may exceed our present expectations."

• **The infant crawls**—Following the First U. S. Conference on Prestressed Concrete, progress at first was slow. Most structures were post-tensioned, and fabrication usually was carried out in the field, generally by contractors anxious to try out the new technique. There were no design standards. The only specifications in wide use were those of manufacturers of materials for prestressing. And to insure safety, at least one full-size beam or girder was tested to destruction for every structure in which it was to be used.

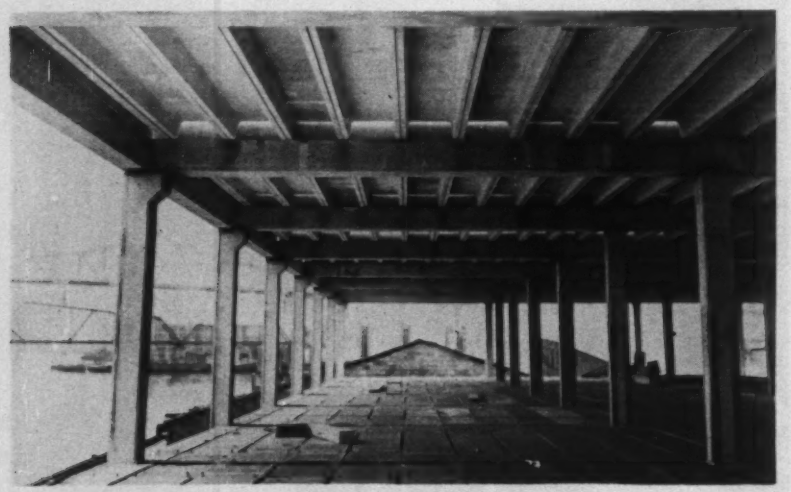
Girders of these pioneering bridges were post-tensioned. In cross-section, the structural members were either rectangular, channels or I-shaped, but gradually the solid rectangle was abandoned. Tendons were bridge strands, or cables composed of parallel 0.192-in.-dia wires or high-strength steel bars up to 1¼ in. in diameter. For end anchorage, the bridge strands were equipped with threaded, swaged fittings. The parallel-wire cables were anchored in either of two ways—gripped between male and female cones or headed for anchorage against a steel stresser. The steel bars were given tapered threads. Concrete used had a strength of about 5,000 psi in 28 days. At first, the tendons were not grouted to the concrete but a trend to grouting, to improve the performance of post-tensioned members, gradually developed.

The American Society of Civil Engineers and the American Concrete Institute formed a joint committee to prepare recommendations for prestressed concrete construction. Meanwhile, the Bureau of Public Roads issued a brief design specification to fill the gap. Not long after, the Bureau began to develop a set of standard sections for prestressed girders.

Growing confidence in the American versions of prestressed concrete, plus the knowledge that bonded tendons not only yield better flexural members but also are conducive to mass production, led to a new trend in 1952. Engineers began to specify pretensioned beams, and fabricating yards sprang up to produce them.

Consultants, including the pioneers, L. Coff, Freyssinet Co., Leap Associates, Ross Bryan and T. Y. Lin, gave fabricators assistance in setting up prestressing plants and helped establish standard shapes and design tables, particularly for building construction. By the beginning of this year, more than 250 prestressing plants had been established.

An industry had been born.

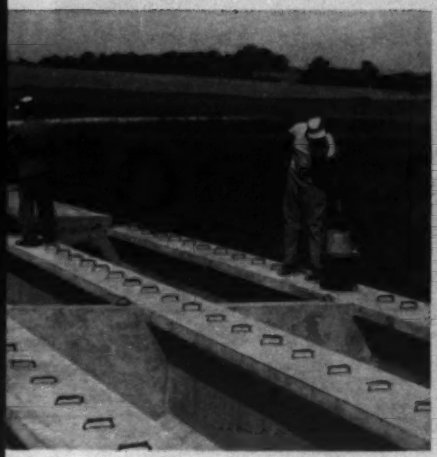


1956—Composite precast and cast-in-place framing.

• **Like beads on a string**—The first prestressed structure was the Fayetteville (Tenn.) Stadium. Completed in Aug., 1950, in accordance with plans drawn by Bryan & Dozier, of Nashville, it was composed of beams made of concrete block. Tendons were ⅜-in.-dia galvanized bridge strand, run through the cores and left ungrouted. The beams were fabricated on the site.

The same type of beams were used for the second structure—the Madison County (Tenn.) bridge—completed in Oct., 1950. However, these beams were fabricated in a highway department yard and trucked to the site for erection. Both pioneering structures are still in excellent condition today.

This early experience convinced Ross Bryan that prestressed members should be fabricated in a plant under close supervision. He also learned that bonding the cables increased the ultimate strength of the structure. So he rede-



with draped strands span 100 ft.

1960—Prestressed girders of Lake Oneida bridge span 320 ft.

signed the blocks to permit the cables to be placed on the outside in a large keyway, which was filled with concrete when a topping was cast on the beams. Furthermore, anchorages were eliminated at one end of each beam by wrapping the cables around that end.

The next stage in the development of block beams put the cables back inside. The beams were stressed in pairs by jacks pushing them apart. Then, the cores were filled with grout to bond the strands to the beams, thus eliminating end anchorages.

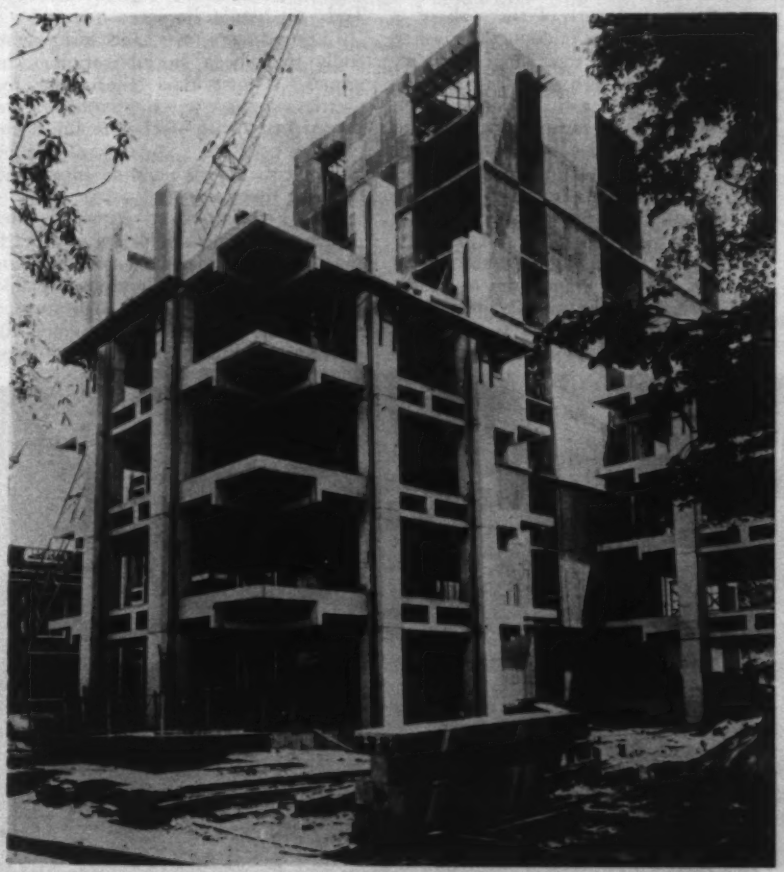
Though this is a very economical prestressing method, it is only a short step from monolithic pretensioned members, more suitable for long spans. Ross Bryan not only took this step next, but he also secured an important advantage of post-tensioning by draping the strands in a vertical curve in his pretensioned beams. This technique was used for the General Shoe Corp. warehouse in Nashville in 1952 and the Ezell Pike Bridge, completed in April, 1954.

Also, block beams were used in continuous construction for a warehouse at Shelby, Ohio, in 1952. Mild steel bars were placed in keyways atop the beams over supports to establish continuity. The next step was to prestressed rigid frames and then to multistory construction.

In multistory work, Mr. Bryan started with single-story columns, later developed designs with three-story columns. Beams are flush with their supports, which are sleeved through for continuity steel. Mr. Bryan's latest design consists of continuous open-web beams and joists carrying light prestressed slabs. Continuity is provided by welded connections. This framing weighs about 20 psf less than the usual prestressed floor systems, and the openings are large enough for air ducts and utilities.

Fabrication techniques meanwhile kept pace with design advances. The original beds for block beams were crudely made of masonry walls topped off with lintel-block beams and reinforced with angles at the corner. When Mr. Bryan shifted to pretensioned channels, they were made from the start on beds capable of taking thrust and bending moment when prestress was applied, as well as the vertical forces required to deflect or harp the strands. He believes such self-anchored beds to be more economical and flexible than beds cast on the ground and provided with built-in anchorages.

• **Headed wires**—Karl H. Middendorf, now chairman of the board, The Prescon Corp., Costa Mesa, Calif., took a different tack. Independently of the Swiss, he conceived of button-headed



1960—Prestressed Vierendeel trusses in an 8-story building.

wires for positive end anchorage. In his design, heads on the wires rest on the perimeter of holes drilled through a steel stressing member; shims retain the desired elongation after stressing. This technique was used for the Arroyo Seco Bridge in California in 1951.

Improvements since then include better machines for heading wires, replacement of the threaded stresser with a grooved one—for faster attachment of the jack and elimination of thread damage—and smaller cables (six to ten wires) to lighten end bearings.

The BBR (Swiss) system of headed-wire anchoring was imported by several fabricators. Formigli Brothers, of Philadelphia, were one of the first. They used this method of post-tensioning for two or three years, then adopted pretensioning with ⅜-in. strands. Their first pretensioning application was the fabrication of several hundred girders for bridges on New Jersey's Garden State Parkway (ENR Aug. 19, 1954, p. 32).

Formigli then moved to make pretensioning more economical by eliminating the compression flange. Why add compression to the part of a beam that will always be in compression? The company started to produce prestressed beam soffits—basically the bottom flange and part of the web of a pretensioned beam, designed to carry dead loads. The top flange and remainder of the web were cast-in-place on the site. Negative-moment steel, embedded in the cast-in-place concrete at supports, insures continuity. Formigli found that this technique made prestressed multistory construction more economical than previously (ENR May 24, 1956, p. 44).

The next step was to pretension long columns to make them easier to handle and erect. And Formigli's latest move was to install a machine for long-line mass production of pretensioned, hollow-core, flat slabs (ENR May 26, p. 34).

New prestressing beds have beams to take cable pull.

• **From double tees to plank**—One of the pioneers in pretensioning was Leap Associates, with headquarters in Lakeland, Fla. Under the guidance of its president, Harry Edwards, the organization standardized on the double-tee cross section about eight years ago. Today, it has 56 licensees.

Improvements over the years generally have been in fabrication techniques. Gravity-type abutments for prestressing have given way to self-anchored beds, with steel stem liners encased in concrete. Dimensions can be varied with adjustable slide forms and fillers in the stems.

Like Formigli, Leap Associates producers, as the next step, are now starting to install machines for long-line pretensioning of hollow-core plank. They are also introducing a prestressed solid plank 2½ in. thick, designed for continuity. Prestressing steel is placed at the center of gravity, thus eliminating the camber-control problem. Such plank, designed for a 100-psf load and continuity over three 10-ft spans, was erected for the stands of the Mulberry (Fla.) High School stadium. It also has been used in folded-plate construction.

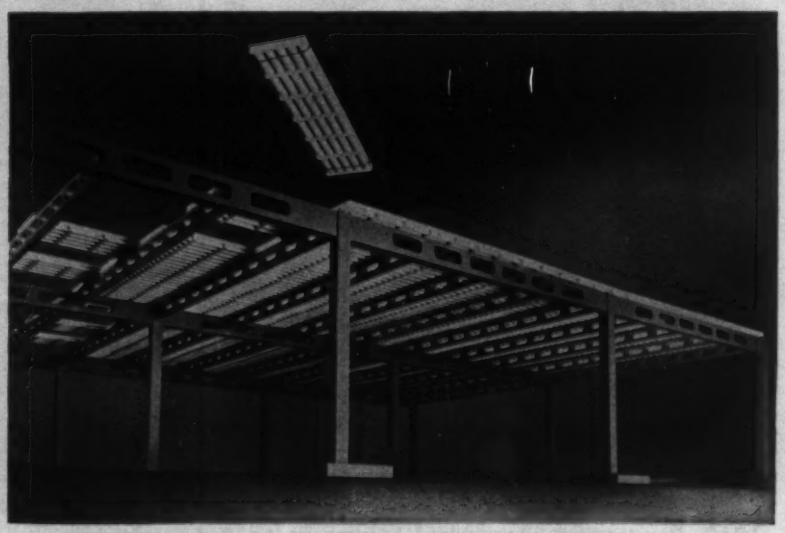
Leap Associates were prime movers along with George Ford, Douglas Cone and Ashton Gray, of Florida, in organizing the Prestressed Concrete Institute. Its headquarters were established in Florida and remained there until membership growth made advisable a move to Chicago, a more central location.

• **Super-concrete**—While there are many other developments and pioneers whose work could be described here as part of the evolution of the infant industry, the story of this phase will be cut short with a brief mention of the work of the Anderson brothers and R. M. DuBois. Nearly ten years ago Art and Tom Anderson formed Concrete Technology Corporation in Tacoma, Wash., and built the first U. S. prestressing factory for the routine production of high-performance structural items. They use concrete reaching a strength of 10,000 psi in 28 days.

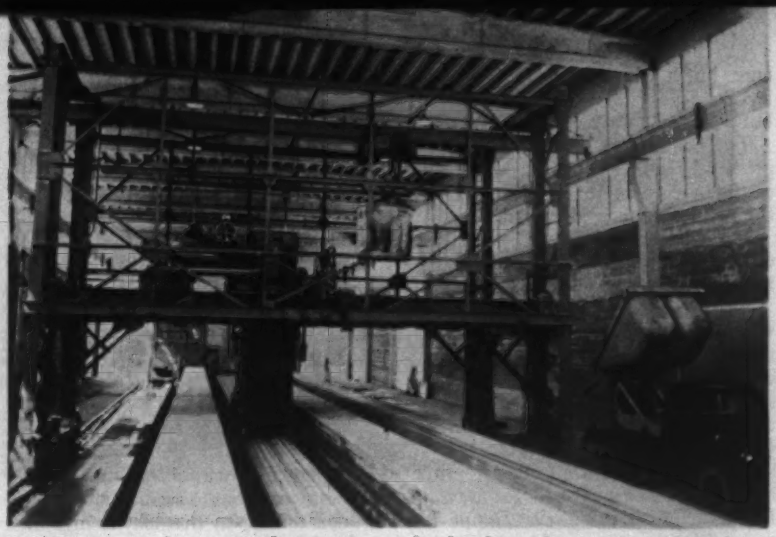
The Anderson brothers' experience on full-size girder tests for many of the early prestressed concrete structures served as valuable background for the creation of a series of standard beam sections (ENR Oct. 17, 1957, p. 326) which have competed successfully with timber structures in the heart of a timber country.

They developed production methods for casting zero-slump concrete in very thin sections by employing intense external vibration and a set-retarding admixture. Without resorting to steam curing, their concrete strength reaches 6,000 psi in 12 hours.

Initially, they concentrated on pretensioning, but as the size of the sec-



Proposed building design calls for open-web girders.



Machine production of prestressed plank is latest trend.

tions and the span length increased, they went to combination pre- and post-tension arrangements. They developed their own system of post-tensioning, utilizing seven-wire strands and anchorages of steel sockets with aluminum cones.

Through their consulting design firm in partnership with Halvard W. Birkeland, they have engineered a number of structures featuring composite construction of precast and cast-in-place concrete. In this field, they have done considerable work on connections for precast concrete, most of the developments having been tested in the plant laboratory on full-scale members.

Mike DuBois played a very important role in bringing prestressed concrete to the U. S. In 1950, he had come to the conclusion that Eugene Freyssinet, who had made spectacular use of prestressed concrete in France, had much to offer the U. S. His techniques did not require as much hand labor as did most other European methods. Mr. DuBois made arrangements to represent Mr. Freyssinet in this country and opened an office here in 1951.

To assist him, Mr. DuBois brought from France two very capable engineers —Neils Thorsen and Jean Mueller. From the beginning, they offered invaluable advice to the industry. Today, the Freyssinet Co. designs more than $1 million worth of prestressed structures annually.

The Freyssinet Co. also built up a reputation for prestressing hardware and equipment. It introduced male and female cones for anchoring parallel-wire cables and a double-acting jack for applying prestress. The company is still making advances in this direction. The latest device is a 100-ton-capacity conical anchorage for twelve ½-in. dia parallel strands. But actually, the hardware is only the means used to accomplish design objectives and not the main business of the company.

• **The infant walks**—As mentioned previously, when the trend to pretensioning developed in 1952, a rash of fabricating plants sprang up around the country. The Korean War and subsequent steel shortages encouraged use of prestressed concrete and establishment of new fabricating plants. But by 1958, steel became plentiful, and competition became fierce. Also, as more prestressers opened shop, they began to compete with each other on a price basis. Meanwhile, the investment required for an up-to-date plant skyrocketed. As a result, growth of the industry slowed significantly.

The chart on p. 40 tells the story. Of 56 producers surveyed for this report, only two were in business one year or less. But 32 had been in operation one to five years and 22 five to nine years. Thus, in the period 1955-59 an average of eight started operations annually, and in 1951-55 an average of four to five, compared with the two last year.

With the increase in plants, the volume of prestressed products rose rapidly. As shown in the chart on p. 40, those of the 56 fabricators in business in 1955 produced 26,000 cu yd of beams and girders. Last year, the whole group turned out 229,000 cu yd of prestressed beams. In 1955, production of plank was 111,000 cu yd, of which 95,000 was that of one fabricator (for the 24-mile Lake Pontchartrain Bridge in Louisiana). In 1959, the group produced 188,000 cu yd. Last year, also, they consumed about 7,100 tons of tendons for plank and 7,400 tons for beams and girders.

For 1960, these fabricators expect an 18.5% increase in plank production but a 2.5% drop in beam production. This would appear to indicate that the greatest growth is in the plank side of the business, and competition from steel is hurting the beam side. This is also borne out by the charts.

The comparison of 1960 and 1955 production indicates that about the same number of producers have increased production 400% or more. But 19% of the beam producers are not doing as well as in 1955, compared with only 7% of the plank producers who are suffering.

The comparison of estimated 1960 production with last year's indicates that 28% of the beam fabricators anticipate a fall off in production compared with only 5% of the plank producers. And 66% of the plank producers expect an increase in business compared with 53% of the beam fabricators.

Furthermore, 75% of the plank producers are operating at 50% of capacity or higher compared with 52% of the beam fabricators. And about 33% of the plank producers are operating at 80% of capacity or higher compared with only 15% of the beam fabricators.

(Turn the page)

Prestressed planking, 2½ in. thick, forms stadium floor.

At present, about 77% of the fabricators are making plank and 86% beams.

From 85 to 90% of these products are pretensioned. And about 90% of the tendons used are strands ranging in diameter up to ½ in. for pretensioning. Conical wedges still are used for end anchorage of cables composed of unheaded parallel wires, but threads on high-strength bars have been generally replaced by conical steel wedges.

Nearly all the plank is used in building construction, the fabricators report. This indicates that Mr. Gannett's appraisal of the building market at the First U.S. Conference was accurate.

About 60% of beams and girders being produced are used in bridge construction, 40% in buildings.

The survey also showed that fabricators are producing concrete with a strength in three days of 3,000 to 6,000 psi, most producers getting about 5,000 psi. Seven-day strengths range from 4,000 to 7,500, with 5,500 psi typical. And 28-day strengths range from 5,000 to 9,500 psi, with 6,000 psi typical. The highest strengths are obtained through tight control of mixes, no or low slump, intense vibration and a retarding agent. Most producers steam cure, but a wide variety of techniques are in use, including air, radiation, oil, hot water and wet burlap.

The fabricators report that they apply prestress from 14 to 72 hours after casting the concrete. Usually, though, the elapsed time is about 16 hours.

In general, forms for prestressed members are made of steel. But sometimes, concrete or wood are used.

• **Achievements**—In recent years, prestressed concrete has been used for a wide variety of outstanding, sometimes spectacular projects:

In bridges, the Oneida Lake bridge, with central span of 320 ft; the 24-mile-long Lake Pontchartrain Bridge; structures on the Garden State Parkway and Illinois Toll Highway; the Tampa Bay and Pensacola Bay crossing in Florida; the Hampton Roads bridge-tunnel; and the Feather River crossing at Marysville, Calif., with two continuous 151-ft spans.

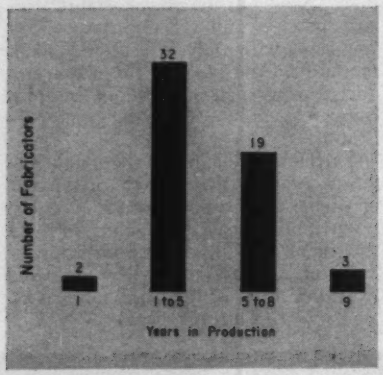
In buildings, the 12-story Diamond Head Apartments and the 24-story office building in the Ala Moana Shopping Center, in Hawaii; 13-story lift-slab apartment houses in San Francisco; 21-story Norton Building in Seattle; and the 8-story medical research laboratory at the University of Pennsylvania.

In 1957, the American Society for Testing Materials issued specifications for wire and strand for prestressing. And in 1958, the Joint ACI-ASCE Committee published "Tentative Recommendations for Prestressed Concrete." However, little progress has been made in getting acceptable provisions in local building codes.

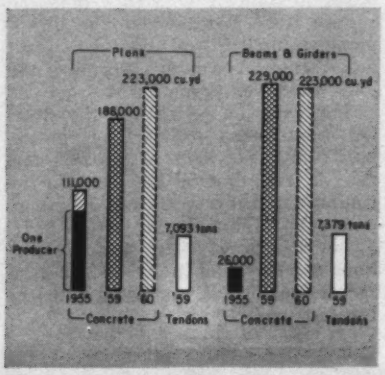
In general, developments in prestressed concrete since 1951 have exceeded the expectations of the conferees at the First U.S. Conference. Perhaps, the one significant disappointment is that the progress in bridge and building construction did not extend also to pavement applications. But work is under way that may change this.

Looking back, we can see that, since the conference, we have developed several American prestressing techniques, learned how to build prestressed structures economically, opened a market for prestressing in buildings, established prestressing plants in expanding industrial areas, and produced design standards, specifications and recommended practices. The infant industry is growing up.

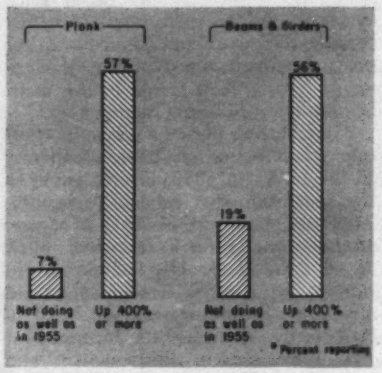
Some facts of importance about concrete producers



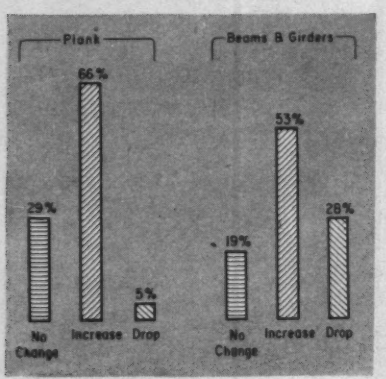
YEARS 56 fabricators surveyed have been in production.



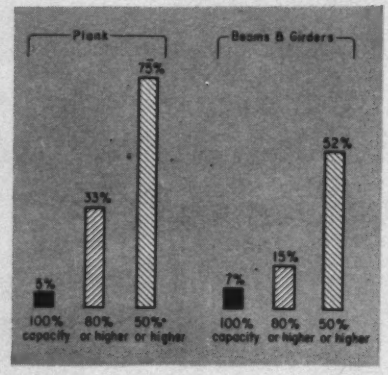
OUTPUT of these fabricators rose from 1955 to 1959, now leveling off.



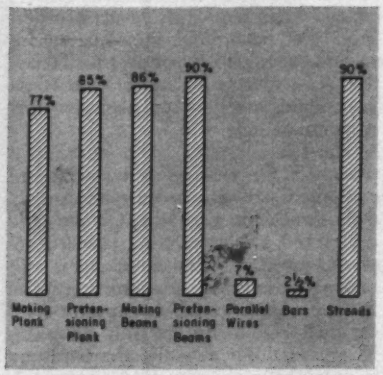
PLANK vs BEAMS—More beam producers are hurting this year than plant men.



OUTLOOK—More plant producers are optimistic for 1960 than beam men.



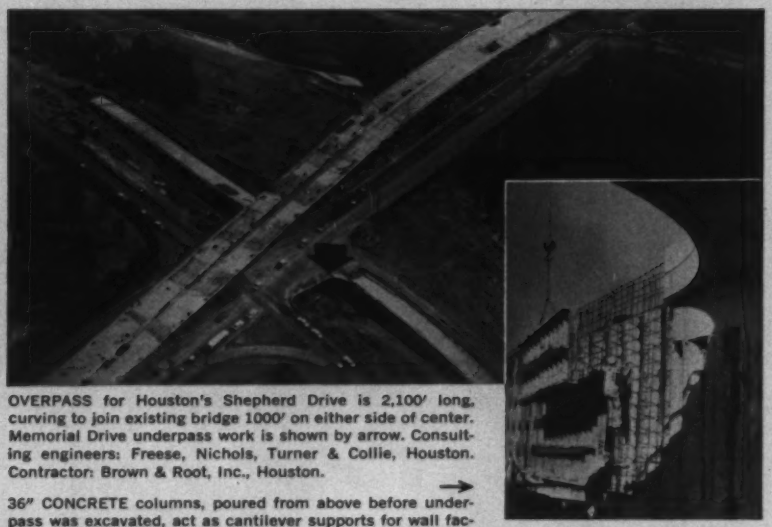
PERCENT CAPACITY of plant operation —few are at 100%.



TYPE OF OUTPUT—Trend is to pretensioning plank and beams with strands.

TRAFFIC ROLLS on Chicago's Montrose Ave. bridge while excavation for Edens Expressway proceeds below.

SEVEN 40-WIRE TENDONS impart a total force of 2,520,000 lbs. to each girder. Concrete was 7-sack mix with 1" aggregate and 6 oz. of air-entraining additive, designed for 5,000 psi at 28 days. Contractor: Thomas McQueen Co., Chicago. Post-tensioning sub-contractor: Joseph T. Ryerson & Son, Inc., Chicago.



OVERPASS for Houston's Shepherd Drive is 2,100' long, curving to join existing bridge 1000' on either side of center. Memorial Drive underpass work is shown by arrow. Consulting engineers: Freese, Nichols, Turner & Collie, Houston. Contractor: Brown & Root, Inc., Houston.

36" CONCRETE columns, poured from above before underpass was excavated, act as cantilever supports for wall facing, which was poured after excavation.

ON MARK TWAIN Expressway, St. Louis, 2½" work slab, placed on natural ground, serves as a form for the two 39' bridge decks.

EXCAVATING revealed 3' diameter bridge columns, which had been poured direct from truck mixers into drilled holes in advance of bridge girders. Contractor: J. E. Latta Construction Co., Inc., St. Louis.

Dig same solution to 3 bridge problems

1. CHICAGO: How to avoid hauling 154' concrete girders through traffic.
2. HOUSTON: Keep 50,000 cars a day moving during grade elimination.
3. ST. LOUIS: Eliminate expensive shoring and falsework.

ANSWER: Build the bridges on solid ground, then excavate beneath them for the roadways they are to span.

For Chicago's Montrose Ave. bridge over Edens Expressway, thirty 154' x 7' girders were cast and post-tensioned in exact final position before the expressway was excavated. Individual piers, on spread footings, were first poured into shaft holes; then the 10 lines of girders were cast in place upon them.

To build Houston's Memorial Drive underpassing two-level Shepherd Drive in a tight right-of-way, with minimum traffic interference, approach walls were poured in close-spaced holes and Shepherd Drive bridge deck completed on existing soil before excavating the underpass.

Where Mark Twain Expressway crosses St. Louis' planned circumferential Interstate route, a twin 252' box girder bridge was constructed on natural ground before excavating for the Interstate underpass. This saved shoring and falsework and cut construction time by two months.

Concreting was also simplified, direct pours being made by truck mixers of certified design, capacity, mixing speed and water control accuracy.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards which are maintained for your protection by the

TRUCK MIXER MANUFACTURERS BUREAU

Blaw-Knox Company, Construction Equipment
Pittsburgh, Pa.
Chain Belt Company
Milwaukee, Wis.
Challenge Manufacturing Company
Los Angeles, Calif.
Concrete Transport Mixer Company
St. Louis, Mo.
Construction Machinery Company
Waterloo, Iowa
Hercules Galion Products, Inc.
Galion, Ohio
The Jaeger Machine Company
Columbus, Ohio
The T. L. Smith Company
Milwaukee, Wis.
Westinghouse Transit Mixer Division
Indianapolis, Ind.
Whiteman Manufacturing Company
Pacoima, Calif.
Willard Concrete Machinery Co., Ltd.
Lynwood, Calif.
Worthington Corporation
Plainfield, N. J.

CONCRETE

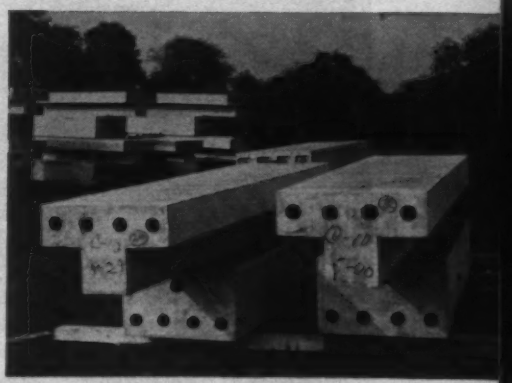
FOR KAHN'S "IVORY TOWERS"

To architect Louis Kahn, the ideal environment for a research scientist is a laboratory secluded from its necessary utility services.

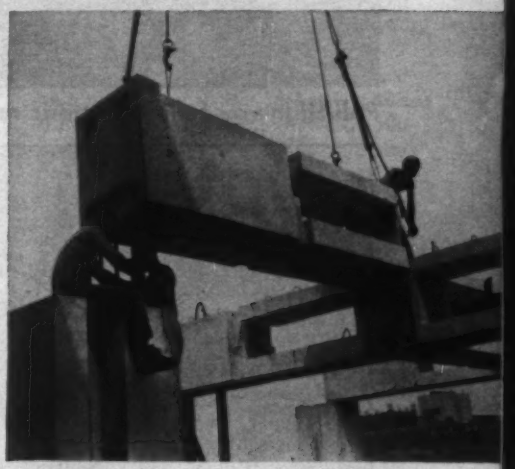
This is illustrated—uniquely—by Kahn's new medical research building at the University of Pennsylvania. Here laboratories occupy three 8-story towers. These connect at each floor with a central structure containing the mechanical equipment, elevators, and other services. Air intakes, exhausts, and fire stairs are housed in tall exterior shafts. The laboratory studios therefore provide a quiet atmosphere, free from distraction.

Concrete contributed intriguing architectural expression to this significant complex. More than 1,000 precast members were manufactured to extremely close tolerances in four specially-designed shapes. At the site, they were interlocked intricately to create the structural frames for the laboratory towers.

Concrete for all these precast members was made with 'Incor'®, America's first *high early strength* portland cement. By speeding the production of such precast concrete members, 'Incor' helps make them economical, helps make this unique type of construction possible.



More than a thousand precast concrete units, produced with the utmost precision and speed . . .



. . . intricately interlocked at the site to form economical multi-story structural frames.

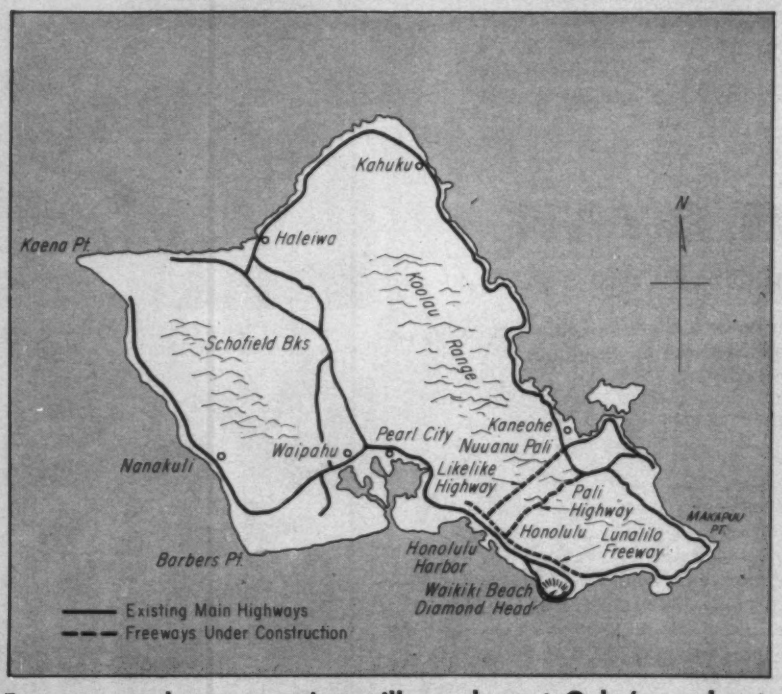
LONE STAR
CEMENT CORPORATION

100 Park Avenue, New York 17, N. Y.

The western hemisphere's leading producer of portland cements . . . and the originator of 'Incor'® *high early strength* portland cement.

ALFRED NEWTON RICHARDS MEDICAL RESEARCH BUILDING, UNIVERSITY OF PENNSYLVANIA, *Philadelphia, Pa.* ARCHITECT: *Louis I. Kahn.* STRUCTURAL CONSULTANT: *Dr. August E. Komendant.* STRUCTURAL ENGINEERS: *Keast & Hood.* GENERAL CONTRACTOR: *Joseph R. Farrell, Inc.* PRECAST, PRESTRESSED UNITS: *Atlantic Prestressed Concrete Company.* READY-MIX CONCRETE: *The Warner Co.* FRAME ERECTION: *Cornell & Co.*

Pali Highway follows historic route from Honolulu over Koolau range to windward side of Oahu.



Freeways under construction will supplement Oahu's road net.

Hawaiian

Congressional approval of the Hawaiian statehood transition bill is expected to accelerate greatly freeway construction in the nation's newest state. Federal aid for highways will be apportioned to Hawaii on the same basis as for other states, including funds for Interstate and Defense highways.

Three modern freeways—all on Oahu Island and all serving Honolulu, the capital and largest city—are being built.

One of these is the $54 million Lunalilo Freeway, a 7½-mile route across Honolulu paralleling the coast and about one mile inland. A six-lane, 1½-mile section is now in use.

This expressway will have the state's first three-level interchanges. One is under construction and another will be placed under contract soon. Two other expressways now under construction and in partial use are the 7.6-mile Likelike Highway and the 7.9-mile Pali Highway. These routes carry traffic across the Koolau mountain range be-

State's first three-level interchange will connect major freeways.

Freeways Take Shape

tween Honolulu and rapidly developing suburbs on the windward side of Oahu. They run through parallel valleys, about two miles apart.

The Likelike Highway (Kalihi Valley Highway and Tunnels) was started in 1954 and may be in full service later this year. It includes the twin 2,700-ft Wilson Tunnels. Construction of this route was long delayed by several tunnel cave-ins, one of which took five lives (ENR Aug 19, 1954, p. 28). One bore is in temporary service to carry one-way peak hour traffic.

The Pali Highway (Nuuanu Valley Highway and Tunnels) replaces an historic winding route built at the end of the 19th century. It is a six-lane divided highway, with two pairs of twin tunnels —one pair 500 ft long, the other 1,000 ft. Both pairs are finished. In the tunnel area, uphill traffic is using one side of the new expressway. Downhill traffic uses the old road. Completion of the route is scheduled for next year.

On July 1, 1961, $12,375,000 will be allocated to Hawaii for expenditure on the Interstate system. Highway officials have completed preliminary planning of 50 miles of Interstate highways, and the Bureau of Public Roads has recommended inclusion of these routes in the system.

The proposed freeways would all focus on Honolulu. Included are routes from Honolulu to Barber's Point (19 miles via Pearl City); Pearl City to Schofield Barracks (10 miles); Honolulu to Kaneohe Marine Corps Air Station (14 miles); and western Honolulu across the city to a point back of Diamond Head (7 miles).

Barber's Point is the location of a naval air station and a growing industrial complex, including an oil refinery, steel mill and cement plant.

Highway engineers and officials have not yet established exact route locations and construction priorities. Total cost of the four expressways may be about $225 million. The state legislature may increase the gasoline tax to provide needed matching funds.

Availability of federal funds for freeway construction may release additional state funds for highway development on other islands of the Hawaiian chain. Included may be an inter-island ferry system to encourage automobile travel (practically all inter-island passenger travel is by air).

Highway construction costs in Hawaii, including right-of-way acquisition, range from as little as $200,000 a mile for two-lane rural highways to $8 million per mile for construction in the middle of Honolulu.

Until now, it has been cheaper to use asphaltic concrete for most road construction. But the construction of two cement plants, which began in August, is expected to bring portland cement concrete into the Hawaiian highway picture.

Design of highways in the new state follows the standards of the American Association of State Highway Officials for traffic and terrain.

Volcanic soils and wide variations in rainfall within relatively short distances create special construction problems on Hawaiian highways.

Engineers and contractors encountered difficult problems in the construction of the 40-mile Hamakua coastal highway serving the rich sugar-producing area west of Hilo on the island of Hawaii, largest of the group. Opened to traffic in April, the highway passes through an area of heavy rainfall (100 in. or more per year), steep cliffs and deep ravines; it required 13 years to complete.

In cut sections, the volcanic soil along this route will stand on a nearly vertical slope (¼ to 1). But in fills, its high moisture content makes it difficult to handle and almost impossible to compact.

Engineers finally adopted a "sandwich" method of construction. In this process, layers of volcanic ash with moisture content as high as 200% are placed alternately with granular borrow material. The granular layer provides a working platform for construction equipment.

Highway engineers also must deal with island history and superstition. Roads occasionally have had to be relocated to bypass the sites of old Hawaiian temples (heiaus), long-abandoned but still remembered.

Work came to a halt recently on a federal project to build an access road to a Nike-Hercules launching site on Oahu, and could not be resumed until a Kahuna (Hawaiian priest) had blessed some ancient carved stones and declared them free of their spiritual power to cause injury to the native workmen.

Rx for a Rock-Choked Hospital

Diagnosis: crammed with rock fill. Cure: drill in caissons for bank support before digging.

Excavation

by Albert DiGiacinto

When a contractor digs in New York City, he expects to find almost anything.

The foundation subcontractor for an addition to Mt. Sinai Hospital in Manhattan found the site filled with huge boulders. And he had to support a 50-ft-deep excavation with a system of drilled-in caissons.

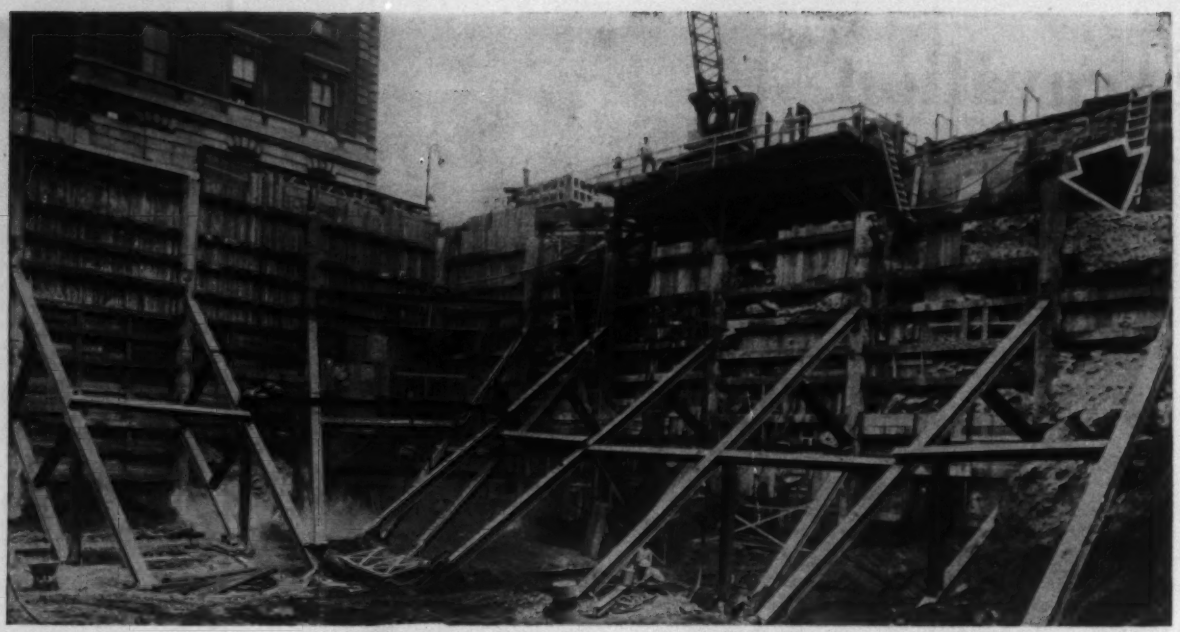
The contractor had planned to install a conventional system of soldier beams, horizontal sheeting and braces bearing on rock to enclose the 100 x 260 ft area of the new structure. However the first cut with a shovel, before driving soldier beams, disclosed that the site had been filled in the past with large pieces of blasted rock ranging in size from ½ to 2 cu yd.

A series of test borings, made before contracts were let for the project, had given no indication of the heavy stone fill. The rock, probably from subway excavations, had been dumped

Albert DiGiacinto is a vice president of Spencer, White & Prentis, Inc., foundation subcontractors for the Mt. Sinai Hospital project.

As grade drops, crews weld beams, carefully sheet the bank.

Cable-drilling rig cuts caissons through rock dumped long ago from subway projects.



Jammed rock projecting into the cut (arrow) was line-drilled and left to avoid slides.

many years ago to fill what then was a low area in the vicinity of the hospital.

Since soldier beams could not be driven through the massive boulders, a conventional bank support system was abandoned. The new plan used 30-in.-dia drilled-in caissons as master piles about 20 ft c-c, with 10WF42 beams as cores. They were carried 4 ft into rock below subgrade.

Drilled-in caissons normally carry heavy loads to ledge rock through difficult ground conditions but have never, to S, W, & P's knowledge, been used as piles for a sheeting and bracing system.

The caissons were sunk by a cable-drilling technique like that used for wells in rock, since the heavy drill bits can cut through nearly any obstruction.

Two cable drilling rigs, equipped with drills weighing about 3,000 lb, installed the caissons. Normally, 30-in. caissons are driven to rock with pile-driving hammers. But because of the boulders, these were drilled from the start of the operation.

Short sections of 30-in. dia, ½-in.-wall pipe were worked into the ground by consecutively drilling the rock, driving the casing and bailing the rock cuttings with the drill rig. Pipe was added in 10-ft lengths and welded to the sections already in the ground. The 30-in. caisson was driven this way until it reached ledge rock.

Next, 4 ft-deep sockets were drilled. Where ledge rock was encountered above subgrade elevation, the rock socket was carried to 4 ft below the grade of the adjacent cut. Cores were inserted in the caissons, extending from the bottom of the rock sockets to the top of the pipe and concreted in place.

With the caissons installed, crews began excavation in shallow levels at the perimeter of the site, working down the caissons.

Horizontal steel members—10, 12 and 14-in. beams, depending on the load to be carried—were welded between the caissons as the grade dropped. These, in turn, supported wood sheeting which retained the stones, riprap, earth and concrete encountered in excavating to subgrade.

Installing the horizontal steel members turned out to be a dangerous and expensive operation. Starting at the top, men working in teams of two carefully pried out pieces of stone to make room for a beam.

After a 3- or 4-ft-deep space between caissons had been gouged out, the horizontal steel member was lowered into place and welded to the caissons at each end. Crews set sheeting between the new member and the one above it, then grouted the whole area back of the sheeting with a free-flowing grit concrete. Thus a cyclopean masonry wall was created, which would remain in place while stones were removed below to make room for the next lower beam.

A number of techniques had to be improvised as work progressed to keep the large stones from breaking loose and smashing into the cut. The stones were interlocked, and often removing one rock would cause others back of the sheeting line to fall out. In some cases, stone was so interlocked that projecting pieces could not be removed for fear of causing an avalanche. These stones were line drilled on the sheeting line and the part projecting into the cut removed by means of plugs and feathers.

Blasting at the perimeter was considered too dangerous because of the possibility of starting a rock slide. At some places, steel bars were welded around boulders to hang them from the horizontal beams. Other stones and large masses of concrete were supported by steel posts resting on the horizontal steel members.

Each pile was braced by two inclined steel struts welded directly to the caissons and seated in niches cut to mica-schist rock below subgrade toward the center of the site. Braces were installed at a 30-deg slope with the horizontal. Workmen prestressed each strut with four sets of steel wedges placed between a pair of ¾ in. steel plates at the toe. All were securely trussed with both vertical and horizontal welded steel members.

Considerable blasting had to be done at site to remove ledge rock between the braces. So as an additional precaution, the contractor tied down the top caisson braces by welding vertical steel posts from their midpoints to reinforcing rods grouted into rock below subgrade.

At one end of the site, where depth to subgrade was about 27 ft, massive concrete abutments were installed at a few locations instead of drilled-in caissons. However, these turned out to be more hazardous and expensive to install than caissons and this method was abandoned.

To support the embankment at the other end of the site, 3 x 5-ft pits, 8 ft apart, were laboriously excavated

If it's a new concrete plant component, look for the Rating Plate

Rating plates have been established by the Concrete Plant Manufacturers Bureau for a simple purpose — to certify compliance with a code of standards which benefits all producers and users of quality concrete.

The standards behind these Rating Plates have been developed by the cooperative effort of the country's leading plant builders and are the product of their combined experience. Together, the member companies of the Bureau represent a total of 229 years during which they have steadily improved the design, construction and operational efficiency of plant equipment.

The standards developed from this experience have been approved by the Board of Directors of the National Ready Mixed Concrete Association. They accomplish the following:

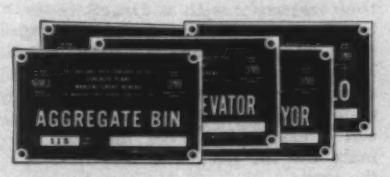
- **Establish proper capacity ratings for concrete plant components.**
- **Define the bases on which capacities and classifications of types are determined.**
- **Establish a uniform nomenclature for the industry.**
- **Provide the Rating Plate, now permanently affixed to each component, which certifies its capacity and compliance.**

These components are now rated: Batchers for aggregate, cement, and water; bins and silos for aggregate and cement; conveyors and elevators for aggregate and cement, and combinations of the above.

Rating plates — small in size, big in significance — are now affixed to all new equipment being shipped by member companies which is in compliance with Concrete Plant Manufacturers Bureau standards.

Printed Standards Available

Have you sent for your copy of "Concrete Plant Standards"? Ready mixed concrete producers, contractors and engineers are asked to direct requests to Concrete Plant Manufacturers Bureau, 1411 K Street, N. W., Washington 5, D. C.



CONCRETE PLANT MANUFACTURERS BUREAU (CPMB)

An affiliate of the National Ready Mixed Concrete Association

BLAW-KNOX COMPANY
Pittsburgh, Pa.

BUTLER BIN COMPANY
Waukesha, Wis.

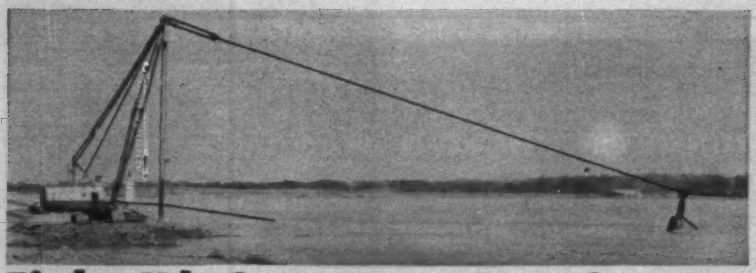
CHAIN BELT COMPANY
Milwaukee, Wis.

ERIE STRAYER COMPANY
Erie, Pa.

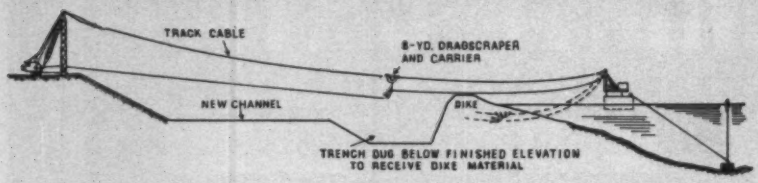
THE HELTZEL STEEL FORM AND IRON COMPANY
Warren, Ohio

THE C. S. JOHNSON COMPANY
Champaign, Ill.

NOBLE COMPANY
Oakland, Calif.



Eight-Yd. Sauerman DragScraper Cuts Seaway Dike Removal Costs

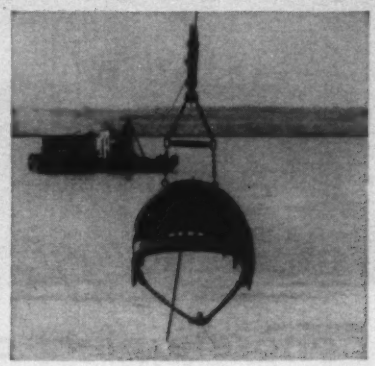


Atlas Construction Co. Ltd., Montreal, Que., had the job of enlarging the St. Lawrence Seaway channel near Iroquois, Ont. An 8-yd. Sauerman Crescent DragScraper and four-wheeled carrier was used with a crane to remove the perimeter dikes composed of tough digging glacial till and to backfill the trenches.

The hoisting line of the crane, used as a track cable for the Crescent and carrier, ran through a block on the boom tip to a 25-ft. tail tower mounted on a 20 x 40-ft. barge. The structural steel spud mast used to support the boom was pin-connected to facilitate movement of the crane.

After inhauling to the trench, the 8-yd. Crescent was gravity-returned part of the way to the excavation. A single-drum hoist mounted on the barge tail tower controlled the backhaul cable used to complete the return cycle. The job was handled by two operators, one on the crane and the other on the barge. The operating span varied from 600 to 900 ft. Average DragScraper hauls were 300 to 600 ft.

This is a typical example of how a crane can handle a Crescent DragScraper of greater capacity than the original dragline bucket or clamshell. Larger machines can usually double their capacity with a DragScraper. Smaller units can handle about 50% more. Machine range is limited only by the spooling capacity of the hoist drums. It can reach farther, dig deeper under water and take material out of soft areas without the nuisance of mats and the hazard of undermining the crane.



DragScraper traveling down track cable on return to underwater dike. Barge is in background.

When the boom is supported by a strut, a DragScraper of still greater capacity can be used. The strut increases overturning resistance and allows a greater load to be imposed. Crescents used in conjunction with such supports increase the rated capacity as much as 4 to 1.

Many operators consider the Crescent DragScraper as standard auxiliary equipment. The DragScraper permits bidding on and getting those premium jobs that could not be handled without considerably more time and expense by other means.

Find out how much you can increase your crane's capacity. Write or call giving the make, model number and boom length of your machine. Field Report 228 and Catalog J gives more information on DragScraper operations with cranes.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

by hand to rock and filled with concrete. Then, spaces between pits were horizontally sheeted as excavation progressed.

While the rigs were drilling the caissons, a 3-cu yd shovel dug out the center of the site.

At the peak of the rock excavating phase of the work, a total of three cranes and two front-end loading tractors, together with a large fleet of dump trucks, were brought in to speed the job.

Water was normally handled by two 3-in. centrifugal electric pumps wired for 220 volt power. A 6-in. pump driven by gasoline engine served as a standby in case of power failure and was operated during rain storms when flow of water increased over the usual amount.

During the job, soap suds began showing up in the sumps. An analysis of the water indicated that water from the sewer system was coming into the cut. But despite lengthy investigations by both Spencer, White & Prentis and New York City forces, it was never possible to track down the source or reduce the flow.

The existing hospital on one side of the cut was supported by installing 2-in. dia tie rods tied back to interior walls. The tie rods engaged vertical 14WF89 beams, set in pits that were sunk to rock along the side of the building before the lot was excavated to grade. The bottoms of these beams were welded to long reinforcing rods grouted in holes drilled at an angle into the ledge rock. About two cubic yards of concrete was placed in the bottom of each pit to further stabilize the vertical beams.

As an added precaution after reaching subgrade, inclined braces were installed from ledge rock to the concrete placed in the bottom of the pits since the strike of the rock was not favorable.

Besides two large concrete mats and many boulders, a large amount of ledge rock was removed in the deep boiler room area. Taking this rock out made brace installation a tough job and required considerable relocation of braces as the work progressed. In spite of this difficulty, a continuous survey of the caissons indicated that there was no inward movement of the bracing system during the work.

The new wing for Mt. Sinai Hospital was designed by Eggers & Higgins, architects, represented on the site by Al Breig. Tony Grasso handled the job for Weiskopf & Pickworth, the structural engineers. Ralph House was in charge of the field operations for Psaty & Fuhrman Inc., the general contractor. Vincent Fahey was superintendent for Spencer, White & Prentis, Inc., the foundation subcontractor. All firms are located in New York City.

another PRESTRESSED CONCRETE *structure*

Architect: Leon Brin, A.I.A., Denver; General Contractor: Norman Construction Co., Denver; Prestressed Concrete Fabricator: Prestressed Concrete of Colorado, Denver.

Architect Leon Brin cites 'acoustic comfort' as a 'sound' reason why prestressed concrete was used in this Denver apartment

The only thing we've added to Mr. Brin's remarks, quoted below, are italics.

"My apartment owners know their tenants are demanding two features: generous balconies to accommodate their outdoor living requirements, and a soundproof structure.

"In this 20-unit apartment, the double cantilever balcony is easily achieved with the prestressed concrete deck. *Further, the deck and the concrete topping eliminate the troublesome floor to floor sound transmission to provide tenants with the acoustic comfort they demand.*

"In addition, the deck becomes the scaffolding for the brick masons to work on each floor. The steel balcony railing is readily attached to the balcony angle iron fascia. (See detail above). With masonry bearing walls and the prestressed concrete deck *the structure is fireproof with no additional treatment required.*

"The exposed tee sections provide an interesting beam effect within each room as well as from the exterior. Floor to floor heights were actually reduced 8 to 10 inches by using 7 feet 4 inches to the bottom of the tee and 8 feet to the deck. *Weather had no effect upon the erection or quality of the deck which was placed quickly and directly.*

"This construction has worked out so satisfactorily that work is about to begin on a similar apartment building containing 36 units."

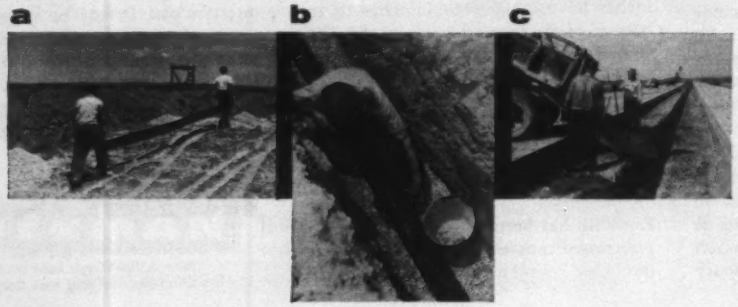
Roebling has been a strong partisan for prestressed concrete since its introduction into this country some fourteen years ago. The knowledge and experience gained from this activity puts us in the favorable position of being able to share information and data on prestressed concrete's different phases with you.

Please do not hesitate to ask us about whatever particular aspect concerns or interests you. It may be design methods, tensioning details or information on the finest prestressing wire and strand available, as manufactured by Roebling. Just write Roebling's Construction Materials Division, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

For the permanent ...USE ARMCO



a 20-foot sections of Armco Perforated Pipe are handled by two men.

b Strong, tight joints are quickly made with coupling bands and bolts.

c Well-graded sand is recommended backfill for most subdrainage systems.

solution to this headache

PERFORATED PIPE

Unwanted ground water in the subgrade reduces the load-carrying capacity of the soil. Result: pavements can't carry the load. They fail. Maintenance costs go up and up.

But there *is* a lasting, sure answer to the problem. Subdrainage systems of Armco Perforated Pipe will remove the unwanted water and *keep it out.*

Here's why Armco Perforated Pipe is a better way to build those subdrains: Infiltration area is controlled. Water is admitted through rows of strategically placed holes in the lower third of the pipe. These holes are large enough to collect water, small enough to exclude solids. Tight joints of Armco Pipe are important, too. Solids can't enter at the joints.

Installation, too, is simplified with Armco Pipe. Long, 20-foot lengths reduce the number of sections to be hauled, handled and installed. For the complete story on ground water control, use the coupon. Or write us, outlining your subdrainage problem. Armco Drainage & Metal Products, Inc., 7600 Curtis Street, Middletown, Ohio.

SEND COUPON FOR CATALOG

New steels are born at Armco

ARMCO DRAINAGE & METAL PRODUCTS, INC.
7600 Curtis Street, Middletown, Ohio
Send my copy of 24-page manual on Ground Water Control

Name_____ Title_____

Organization_____

Address_____

City_____ Zone____ State_____

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

The New Pump That's Making News

Everyone who has seen it in action is talking about it. It's the new Homelite 2" Centrifugal Pump . . . a pump that mates action with quality. It has the works. Light and compact. Weighs only 69 pounds. One man can pick it up, carry it and put it in action anyplace . . . close to your dewatering problems. Handles 10,000 gallons per hour. Self priming, of course, with guaranteed 28 foot lift. In addition to all well-known Homelite features you'll find a new ceramic-coated seal that lasts up to 25 times longer plus an optional automatic idle control. Two models available . . . one with slow speed for fuel and maintenance economy, the other with standard speed for higher heads.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

EXTRA! EXTRA!

NEW AUTOMATIC IDLE CONTROL

The latest news-maker from Homelite is the control accessory that automatically idles engine when water level drops below strainer. Brings engine up to full pumping speed as water level rises. With pump working only when needed you save fuel, maintenance and labor costs. Ask for a demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1111 ORIVERDALE AVE., PORT CHESTER, N. Y.

Long Load Truck Has Narrow Cab

More than 25 models of International Trucks with gross vehicle weight ratings of from 16,000 to 47,000 lb, are available with factory-installed narrow cabs.

The cabs—only 50 in. wide—are located midway between the fenders, leaving an area 21 in. wide on either side of the cab for the transport of long narrow loads, such as structural steel, reinforcing bars, pipe, lumber, poles and trusses. Shorter loads can be carried behind the body.

With equal loading space on both sides of the cab it is possible to balance a load evenly across the body of the truck. This avoids drag on the right wheels or overloading the right side springs, which often occurs with conventionally placed (left side) narrow cabs.

An outrigger load support mounted above the front bumper helps stabilize loads longitudinally and permits a longer front overhang. For vertical clearance and fender protection, fenders are flattened on top and reinforced with floor plate.

A roof hatch is provided to permit the driver to enter and leave the cab when both doors are blocked by loads. Side windows and kick-out windshields offer emergency exits.

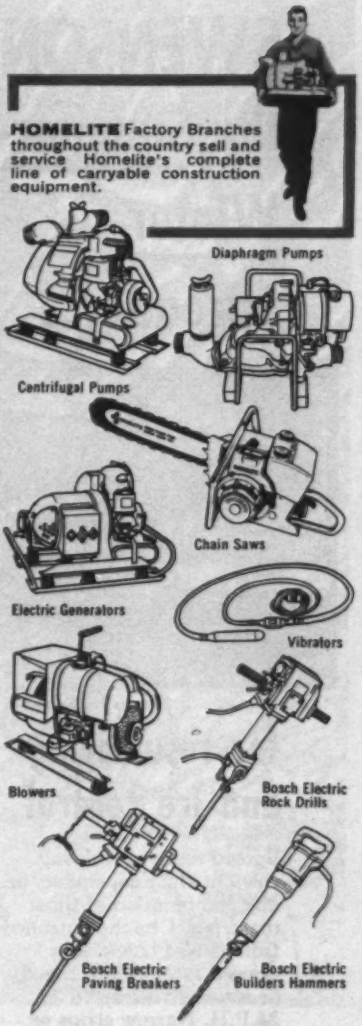
All vehicle controls are factory positioned for driver convenience and comfort, and power is supplied by International six-cylinder gasoline engines with horsepower ratings ranging from 153.5 to 212. Special bodies are also available. INTERNATIONAL HARVESTER CO., 180 NORTH MICHIGAN AVE, CHICAGO 1, ILL.

Culvert Formed From Aluminum

Corrugated aluminum sheet for culverts weighs only ⅓ as much as comparable steel sheet.

Tests indicate that aluminum culvert sheet has superior corrosion resistance and excellent general underground characteristics. The aluminum alloy has approximately the same yield strength as mild steel, according to the manufacturer.

The sheet is corrugated at the rolling mills and delivered uncurved to culvert manufacturers, who curve culvert sheets and then rivet the sections together. The completed culvert is shipped ready for installation. Aluminum culvert may be coated if desired. KAISER ALUMINUM & CHEMICAL CORP., 300 LAKESIDE DRIVE., OAKLAND 12, CALIF.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE

A DIVISION OF TEXTRON INC.

1110 Riverdale Ave., Port Chester, New York

In Canada:

TERRY MACHINERY CO. LTD.

SWENSON
the Summer-Winter Spreader...

U. S. Army Photograph

for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.

Wrench Adjusts Manhole Height

A cast-iron manhole frame, called the Adjust-A-Frame, is designed to simplify the job of aligning manholes with pavement. A 6-in. vertical travel permits one man to raise or lower the frame with a wrench, the maker says.

After the pavement has been rolled, a worker can make adjustments where necessary. The movable section which supports the manhole cover is supported by five vertically positioned chromium plated bolts, which are set in pockets protected with lubricant. The bolts rest on a bearing ring. The ring requires no shimming—the adjustment feature lines up the frame and cover with the pavement.

Surrounding the device is a one-piece sheath designed to prevent leakage into the vault.

The Adjust-A-Frame is installed according to established practice while the grout is wet, back filled and tamped as usual, then adjusted to grade. Adjust-A-Frame, 903 Leesburg Pike, Falls Church, Va.

Plastic Pipe in Prefab Plumbing

Prefabricated plumbing walls are made with a lightweight, heat-resistant and non-corrosive plastic pipe. The plumbing wall is the first of several building applications for a new vinyl plastic.

The plastic, called Hi-Temp Geon, can withstand temperatures up to 200 deg. F., 60 deg. higher than conventional vinyl. It can withstand operating temperatures from 180 deg. F. to 200 deg. F. along with pressures up to 150 lb. per sq in.

Pipe made of this material is only ⅛ the weight of copper pipe, claims the vinyl manufacturer. Geon pipe has good heat insulation, mechanical strength, impact resistance, is non-flammable, and resists corrosion from strong alkalies and acids.

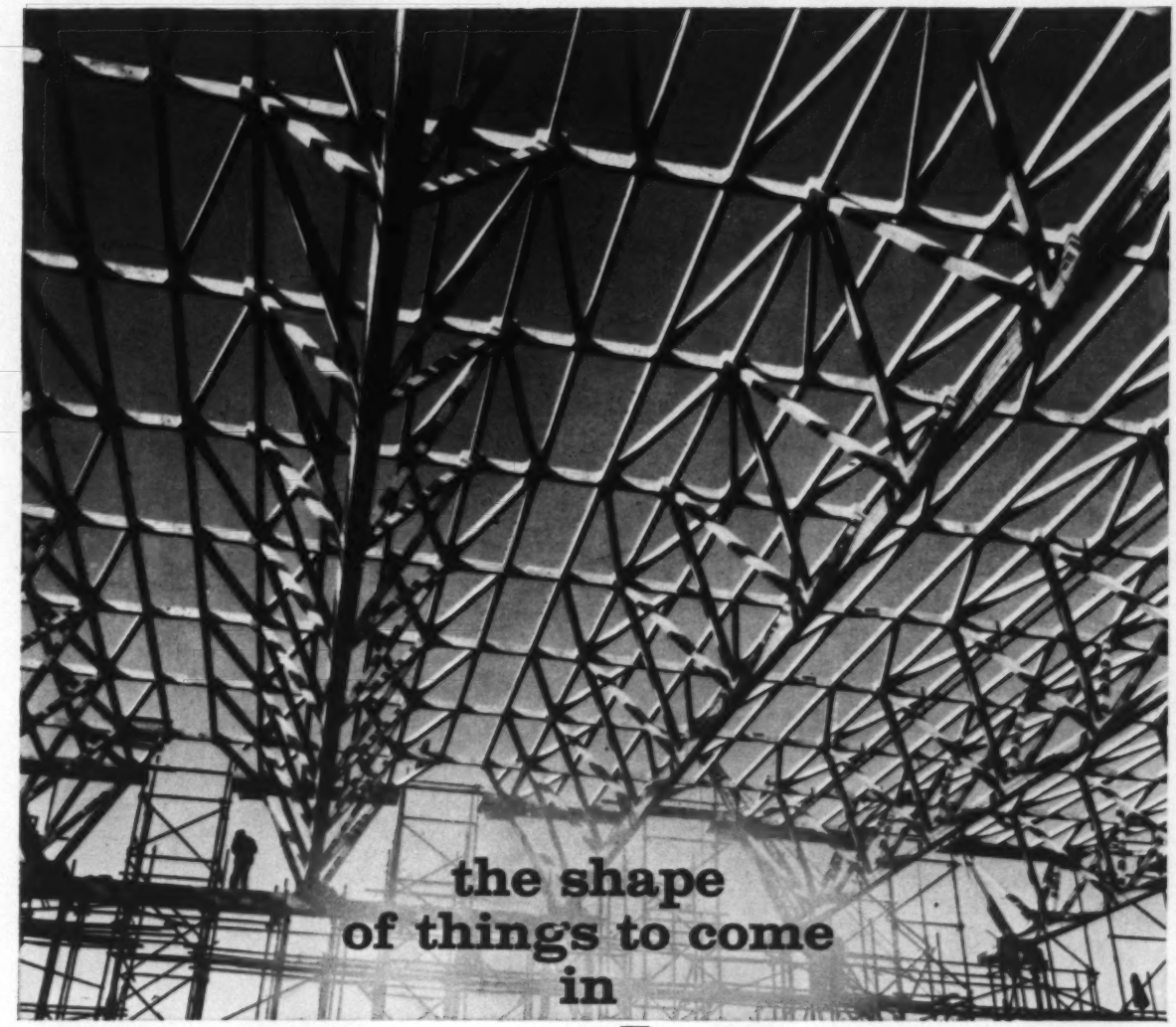
In an actual trial, hi-temp Geon has passed tests of contact with 98% sulphuric acid at 185 deg. F. for 30 days—a condition no previous vinyl compound has survived, says the manufacturer.

Because of their light weight, prefabricated plumbing walls can be trucked to job sites and swung into position by light cranes. A two-story installation now is functioning satisfactorily in the National Association of Home Builders' research house at East Lansing, Mich.

Geon pipe can be joined with socked solvent cement joints or threaded couplings. It can be cut with an ordinary saw and formed to desired shapes by heating.

B. F. Goodrich Chemical Co. supplies the resin material for the new process . It is working with several pipe manufacturers to bring this product to the market on a large scale some time next year.

The modified vinyl also is expected to find ready applications in ducts, conduit, and corrosive resistant paneling, says the maker. B. F. Goodrich Chemical Co., 800 Second Avenue, New York 17, N. Y.



prestressed concrete

You're looking at the new Gatwick Airport hangar near London—and at a conception in design and construction as modern as tomorrow. Gatwick is framed by three-dimensional trusses of precast, prestressed concrete . . . *trusses which span 110 feet, yet weigh just 22 pounds per square foot*—a saving ranging from one-third to one-half over "conventional" materials. This opens the door to solid potential cost savings in future construction.

The Gatwick application is but one of many in which the know-how of top designers, working with prestressed concrete, is shaping the future of building the world over. Industrial plants, bridges, warehouses, schools, stores, banks, piers . . . whatever *your* application, you can keep pace with advances in prestressed concrete technology without cost or obligation. Just fill out and mail the coupon.

FREYSSINET AFFILIATES

Freyssinet—famous the world over for high standards, design economy, speed of construction.

FREYSSINET AFFILIATES, P. O. Box 51, New York 5, N. Y. ENR

Gentlemen: Please send me forthcoming issues of PRESTRESSED CONCRETE NEWS, featuring recent construction developments.

*Name*_____

*Title*_____

*Firm*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Three weeks lost to bad weather, but Stuart, Inc.

GULF MAKES THINGS

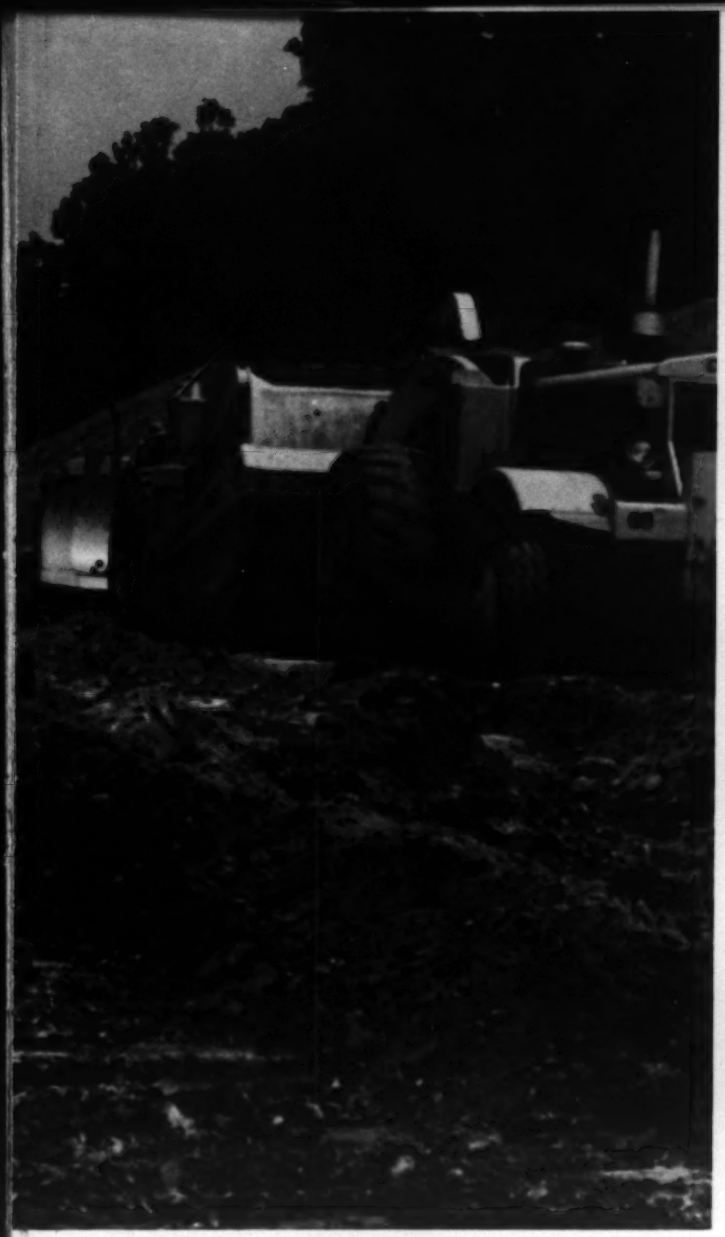
This Maryland road project calls for the removal of 1,750,000 cubic yards of rock and earth—including 200,000 yards of blasted rock, and 500,000 yards of rooted material.

It's a 7½-mile section of Maryland Route 97—a feeder route to Washington, D.C. And in spite of three weeks of weather delays, J. O. & C. M. Stuart, Inc., is keeping pace.

"Staying on schedule when you can't control the elements is no accident," says Henry M. Scott, General Superintendent. "You do it with the elements that can be controlled—your equipment!"

Mr. Scott started this control with an effective preventive maintenance program: oil changes every 120 hours, grease jobs each 10-hour day, and air cleaners changed daily.

The company's selection of a crankcase oil shows further attention to equipment performance. The choice: Gulf® Super-Duty Motor Oil. Mr. Scott tells why, "Our spread includes scrapers, tractor dozers, crawler tractors, motor graders, a dragline, and two 50-ton rubber-tired compactors. And with only one oil for all equip-



To keep them rolling, these two trucks service units on the job. One truck stocks Gulf diesel fuel in an 8,000-gallon storage tank. The other truck carries Gulf lubes.

Conference. C. M. Stuart, left, Vice President, Henry Scott, center, General Superintendent, and N. K. Arch, Gulf Sales Engineer. Gulf products have helped keep project on schedule—in spite of poor weather.

stays on schedule . . .

RUN BETTER!

ment, the wrong oil won't get into crankcases and cause trouble at a later date."

In addition, Stuart switched to Gulf® diesel fuel and wiped out the problem of heavy sulphur deposits on pistons and rings. Finally, one grease is used for all units —Gulflex® A. In sum: Gulf products hold downtime to a minimum, keep equipment on the job.

Try Gulf fuels and lubricants on your next project. And you'll find out why Gulf makes things run better! For more information call your nearest Gulf office. Or, write us.

GULF OIL CORPORATION
Dept. DM, Gulf Building
Houston 2, Texas

GULF

SP-9883

Plane, Train or Limousine?

(*none of these, this is a helicopter!*)

Looks like a conference room, doesn't it? Well, it is in a way. The cabin of this new turbine-powered Sikorsky S-62 was designed by Raymond Loewy to make every trip conducive to meetings, study, work and even rest.

The turbine engine not only contributes to this atmosphere with its smooth, quiet operation but also has an unequalled record of reliability to recommend it. And because the mechanical components of the S-62 have been proven in over 1,000,000 hours of flight, periods between overhauls are four to five times longer than would normally be expected of new components.

This nine-passenger, boat-hulled Sikorsky S-62 is the newest addition to the family of helicopters you so often see in the news transporting government dignitaries both here and abroad. As it does for them, a Sikorsky helicopter will cut your executives' traveling time considerably.

So today, jot a note to Sikorsky Aircraft on your letterhead and a representative will call to show how your company can gain in *business*, in *time*, in executive *power* and in *prestige* with a new Sikorsky S-62 executive helicopter.

A New World of Mobility by

SIKORSKY AIRCRAFT

Stratford, Connecticut

A Division of United Aircraft Corporation

Crane for Truck . . .

. . . Has Jointed Boom

A 3.3-ton capacity hydraulic crane can be mounted in a 15-in. space behind the cab of a truck. Called the Model F-6600 ZX Foco-Crane, the unit has a fully articulated boom which can raise, lower and swing loads.

The boom, which telescopes, has a maximum lifting height of 25 ft. Its lowest reach is 4 ft 5 in. below ground level. The boom has a maximum reach from the center of truck of 17 ft, has a swing angle of 280 deg.

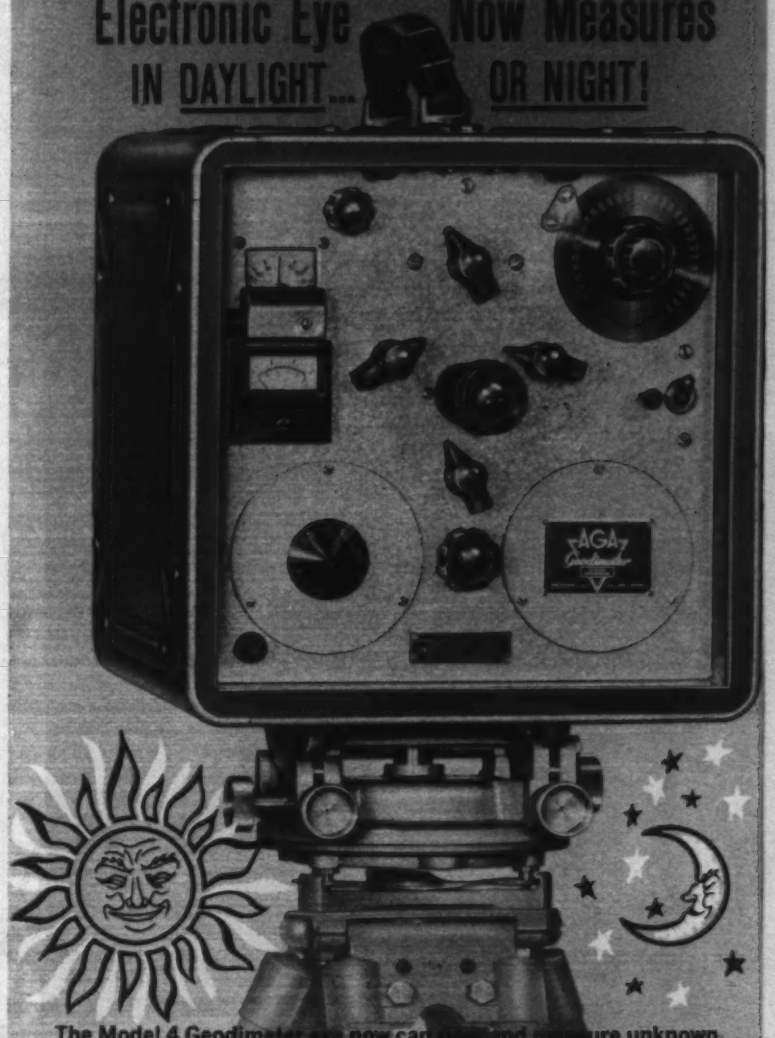
The installed weight of the boom and its appertenances is about 1900 lb. The unit has a lifting capacity of 2,200 lb at maximum reach and up to 6,600 lb on a short reach. Focowil Corp., 79 West Monroe St., Chicago 3, Ill.

Urethane Coatings Protect Many Exterior Finishes

Protective and decorative coatings have been developed for exterior applications in a line of urethane compounds available in both gloss and semigloss finishes. The colored coatings can be combined with graded fine aggregates to produce a variety of textured effects on concrete, masonry, wood, mineral board, primed aluminum and other metals.

Five years' exposure in development tests conducted in Sweden show no deterioration, blemishing or color fad-

Electronic Eye Now Measures IN DAYLIGHT... OR NIGHT!



The Model 4 Geodimeter eye now can [illegible] and measure unknown distances over any terrain in DAYLIGHT or NIGHT!

Lightweight...only 30 lbs., the Model 4 is easily portable. Requires only one trained operator to survey almost any project. Important time and cost savings allow you to spread your personnel over a greater number of projects.

Accuracies are unparalleled, 0.04 of a foot tolerance over 50-feet to 3-miles. Once you discover the reliability, you'll agree the Geodimeter will become the criterion against which ordinary means of surveying are compared.

Write for further information...ask for a free subscription to the AGA News Bulletin.

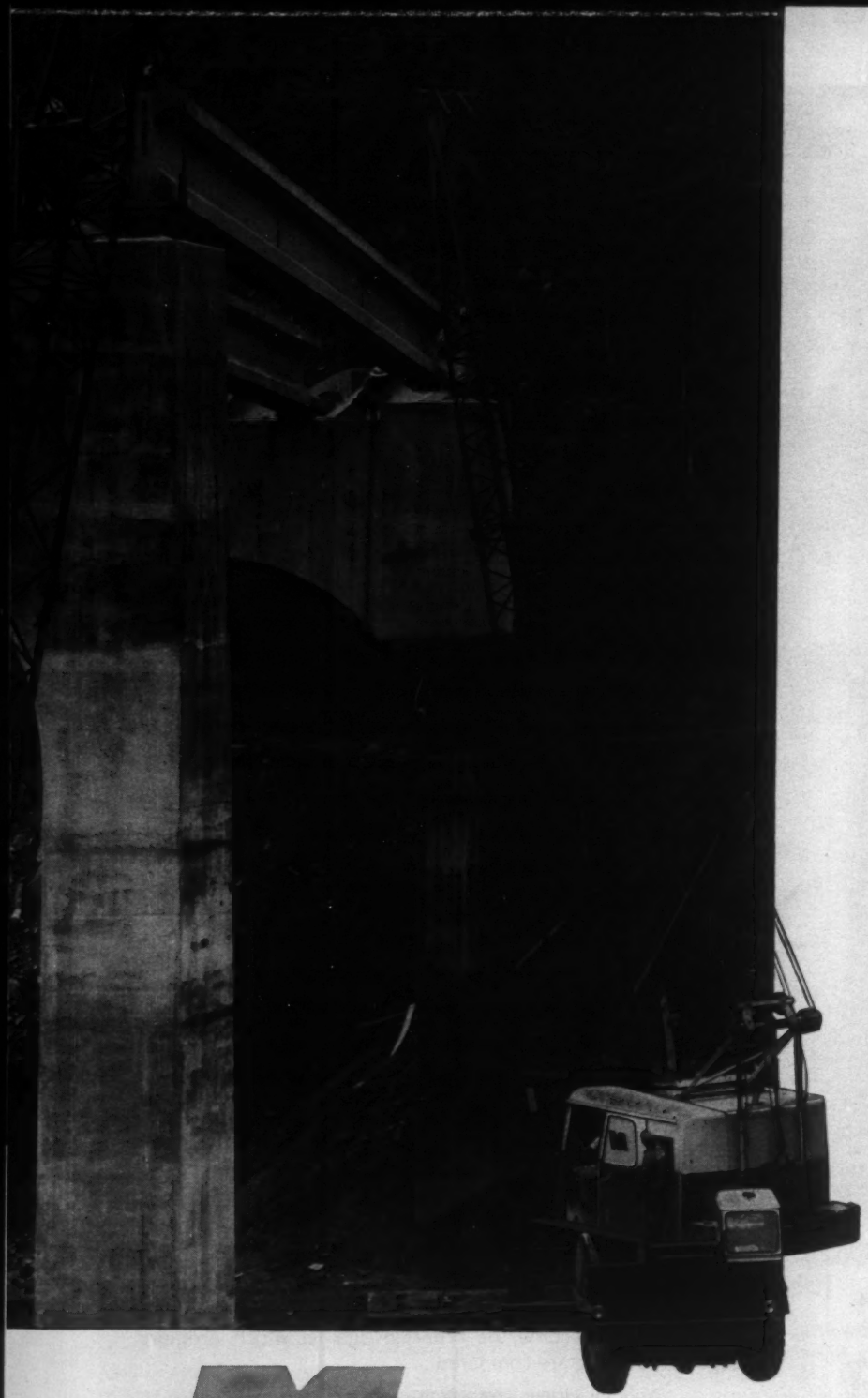
The Geodimeter Co. division of

AGA CORPORATION OF AMERICA

South Plainfield, N. J.

REPRESENTATIVES

Surveyors Service Co., 2021 S. Grand Ave., Los Angeles, Calif. • Thorpe-Smith, Inc., 308 S. Washington St., Falls Church, Va. • Carl Heinrich Co., 711 Concord Avenue, Cambridge, Mass. • National Blueprint Co., Union Station Bldg., 517 W. Adams St., Chicago, Ill. • R. L. Sargent Co., M & M Bldg., Houston, Tex. • E. Phil Harris Co., 125 S. 68th St., Birmingham Ala. • Seiler Instrument & Mfg. Co. Inc., 1629 Washington Ave., St. Louis, Mo.



BENT MOUNTAIN BRIDGE WORK

Famed Skyline Drive in Virginia is getting a new look these days as a 40-ton, 43-M truck crane helps erect spans for an overpass situated 1900 ft. up the side of Bent Mountain near Roanoke. Using positive-acting Marionair control, these 35-ton prestressed beams are quickly hoisted in place with pinpoint accuracy.

Because of the steep switchbacks and narrow, short turns, the trucks which hauled the concrete beams had to be lifted around some of the curves. The Marion handled the job easily... without outriggers.

More proof that Marion cranes are the machines for you? Your nearest Marion distributor has it.

You get MORE *with* MARION

Marion Power Shovel Company, Marion, Ohio

A Division of Universal Marion Corporation

ing, according to the manufacturers. They say the urethanes are probably the most water-resistant organic coatings ever developed and have excellent characteristics of weatherability, hardness and resistance to chemicals.

The makers report that the coating is so hard and smooth that dirt will not cling to the plastic material, reducing maintenance costs over long periods. In addition to spray application in the field, the material is suited to roller coat or float coating application in plants. BB Chemical Co., 784 Memorial Drive, Cambridge, Mass.

Soil Stabilization Mixer Can Be Rolled to Jobsite

The Eagle Mixer for soil stabilization is equipped with rubber tires and can be hauled to a job site by a truck tractor. At the site, the unit is raised by an integral hydraulic hoist to an overhead position, and permits gravity loading of trucks without excavation of a driveway beneath the loading bin. The raised mixer is locked in place.

The Eagle Mixer is a heavy duty unit with replaceable Ni-Hard chromium-nickel iron alloy corrugated paddles on opposing tubular steel shafts. Material is conveyed by paddles to bottom discharge opening over loading hopper during the continuous mixing cycle. Spray bars and flow meter permit adding water in any desired amount. Drive gears are totally enclosed and run in an oil bath. Capacities range from 225 to 600 tph, depending upon diameter of the combination screw and paddle flights, and upon rotating speed of mixer shafts. Eagle Iron Works, 181 Holcomb Ave., Des Moines, Iowa.

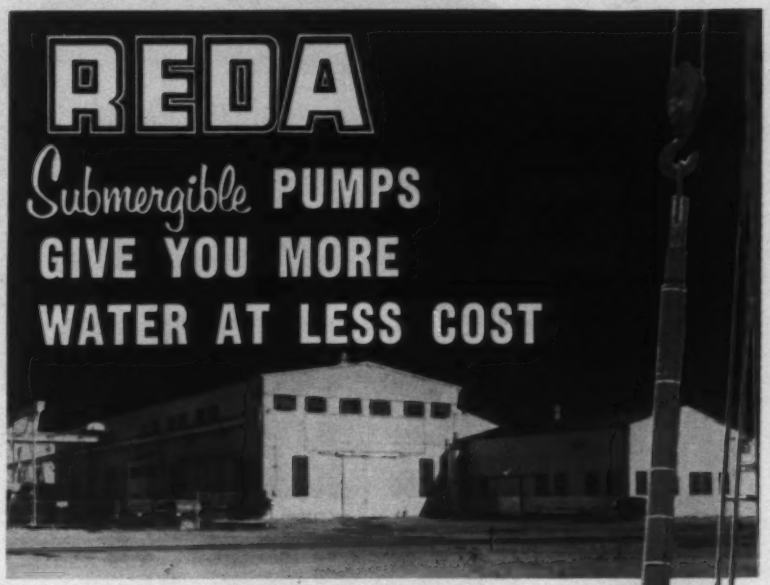
Measuring Vibrations Is Easy Job with Light Unit

Pile driving and excavation or demolition explosions sometimes cause severe vibrations in buildings and structures. A new instrument that measures these vibrations is designed to do so effectively and simply, its maker says.

The device is also said to be useful in determining the ability of structural members of a building to withstand earthquakes, blasting, vibrations from automobile traffic and such.

No technical training is required to operate the instrument. It takes only minutes to set up.

Contained in a rigid aluminum carrying case, the unit measures 25x10x8 in. and weighs 38 lb. No external power source is needed. W. F. Sprengnether Instrument Co., 4567 Swan Ave., St. Louis 10, Mo.



A complete line of models from ⅓ to over 500 H.P. provide capacities from 5 to over 1,000 gpm for wells as deep as 10,000 feet. As there are no belts, drive shafts, and no special piping is required, installation is easier and less expensive. Reda Pump Operating costs are low with little or no maintenance. Power costs are approximately 1¢ per KWH per horsepower and even lower.

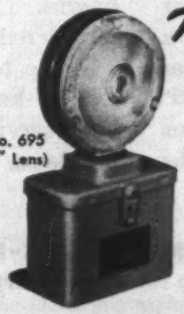
Over 100,000 Reda installations for farms, ranches, industries, municipalities, etc. attest to the confidence users place in the ability of Reda Submergible Pumps to give them economical dependable water supply.

Write for Bulletin R-432. . . Complete information will be promptly furnished.

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY
BARTLESVILLE, OKLA.

Manufacturers of electric submergible motors and pumps for over 40 years. Pumps for Oil, Brine, Water, LPG, Gasoline, Jet Fuel.



Now... **the New No. 695 *Visi-flash* joins the famous DIETZ family!**

- **Large 5" lens with reflex reflector for added safety**
- **Die-cast head for greater strength, rigidity and stability**
- **Available with plug-in or switch type circuits**

Write for details and catalog No. 55 showing the complete Dietz Visi-flash Line.

R. E. DIETZ Company **Dept. 510 Syracuse, N. Y.**

LARGEST CONCRETE PIPE
MADE IN CANADA
10 FEET DIAMETER
CANADIAN MARIETTA (ONTARIO) LIMITED
ST CATHARINES – TORONTO – CHATHAM
FOR HUMBER SEWAGE TREATMENT PLANT

Contractor: Dravo of Canada, Ltd., Toronto.
Engineers: James MacLaren & Associates, Toronto.

It's king-size for Canada, but commonplace in the United States—this 16-foot section of 10-foot diameter precast concrete pipe.

Joined by "Pressure Proven" rubber and steel AMSEAL Joints to provide a positive, water-tight seal against infiltration or leakage, over 2000 feet of the 120″ pipe is used in the Toronto subacqueous outfall sewer. Other sections include lengths of 108″, 96″, 84″, 72″ and 54″ diameter pipe.

American-Marietta's up-to-date facilities, strategically located throughout the country, assure prompt and regular deliveries. Long lengths speed installation, too, by reducing handling and joint making.

Write today for descriptive literature. Let us know if our technical staff may be of service in helping to solve your pipe problems.

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

New Honors for an Old Pro at 86

Guy F. Atkinson, the company, is one of the behemoths of the construction industry. But to Guy F. Atkinson, the man, that's a mixed blessing.

Happily for the still-vigorous octogenarian, the company that bears his name is now involved in over $100 million worth of contracts. More important, many of the jobs are within easy driving distance of his home outside Los Angeles; he can and does plant his feet firmly in freshly turned dirt almost every day. That, he likes.

But take him away from the roar of construction and surround him with the politer but more ominous sounds of adding machines—computing, let us say, the large Atkinson Co. payroll—and Guy F. Atkinson can scarcely conceal his distaste.

"That damn San Francisco office," he says, "is getting as big as the Pentagon. You have to have engineers and analysts and all the rest of it. Forty years ago I could have carried all the information I needed right in my back pocket."

That is probably no idle boast. For 40 years ago the man who next week becomes an honorary member of the American Society of Civil Engineers had already been in construction for close to 30 years, from the age of 16.

In 1949, when Guy Atkinson joined ASCE, he was 75 years of age and had already spent a lifetime in contracting. As he's awarded the Society's highest honor in Boston next week at the age of 86, he may not become the oldest of the living honorary members, but he'll be the only contractor and one of the few self-made men among them.

The Atkinson family has been in construction since 1830, when Guy's grandfather, John, a Yorkshireman who had emigrated to the United States, started a masonry contracting business. John's son, George, followed his father in the business and George's five sons came in as they grew up.

Thus Guy, the youngest of the five sons, was born with a brick and mortar spoon in his mouth. He was chief estimator and office manager for his father's firm while still in his teens; a full partner by the time he could vote. That was 1896 in Colorado Springs, Colo.

Guy established his own office in Los Angeles in 1911, and began long months of fruitless bidding in that highly competitive area. It was not, in fact, until 1914 that he emerged as an important highway bidder. In that year he and his brother Lynn took on one of the first contracts let by the California Highway Department—a 20-mile concrete highway section through the desert near Bakersfield, a job so tough there were no other bidders. The paving, 4 in. thick and 15 ft wide, is still in place.

GUY F. ATKINSON: At 86 years of age, he still can't stay away from a job.

But it was the last construction job Guy was to see for some years. He moved for a time into the lumber business in Portland, Ore., (he still has large timber holdings in the Northwest and the company has at various times owned and operated sawmills) where, lumber notwithstanding, he continued bidding on highway and building jobs with consistent lack of success.

Not until 1921 did he get back into construction. California again, another road, another desert.

The move out of the construction desert into the big time came in 1925 when he joined his nephew, Lynn Atkinson, Jr., and W. A. Kettlewell, who were already low bidders on the $6.5-million Pardee Dam on the Mokelumne River in California—the largest job of its kind at the time, and the first to use an automatic aerial tramway to carry aggregate.

The present Guy F. Atkinson Co. was formed in 1929, a partnership between Guy and his sons George, now president and general manager, and Donald, who left construction soon after to become a wheat rancher.

For its first job, a four-mile section of highway, the company bought the largest shovel the Northwest had seen up to then, a 2-cu yd bucket. Today, of course, measured against the Atkinson stable of equipment—$10 million worth, not counting equipment shared with joint venturers—that's not very big. But back when Guy began, he recalls, "We used to use four mules to move dirt, and we could move it about a third of a yard at a time."

Fortified by a big shovel and some trucks, the Atkinson Co. moved into the depression with enough confidence to bid on big jobs but not enough luck to win them. Still, although the big

fish eluded him, Guy Atkinson and his company were gaining a reputation on smaller jobs as one of the leading engineer-constructors on the West Coast.

The company began to gain momentum in 1934 when it won a $1.4-million contract for the lock and powerhouse excavation for the Bonneville power project.

Associations made on the Bonneville job led directly to the big one—Grand Coulee. With Atkinson on that bid was Elmer Kier, a former employee of Guy's father who had gone on to become a major contractor in his own right, and the Silas Mason Co. The group took in the Walsh Construction Co. and the Thompson-Starrett Co. to form MWAK. The winning bid: $29,339,301. The only other bidder was the Six Companies group led by Henry Kaiser, which bid $34,555,582. Later, MWAK and the Six Companies group combined on the second Grand Coulee contract at $34,442,240.

Guy F. Atkinson was finally out of the desert, up at the top of a huge organizational heap. Yet "joint venture" and "organization" are words that grate on Guy Atkinson's nerves today.

"If I had my way," he says, "we wouldn't enter into any joint ventures. They're a damn nuisance. But my son's running the business and he likes them." Guy would vastly prefer to pitch into even the biggest jobs alone. The company still sidesteps joint ventures on highway work.

And even while Grand Coulee was getting built, the Atkinson Company plunged into other big jobs alone. Among them: $8-million Hansen Dam in Los Angeles and $9-million Mud Mountain Dam near Seattle. (Mud Mountain proved aptly named—to construct the specified earthfill core in unceasing rain Atkinson had to erect a huge tent in the canyon to protect the site.)

Even a partial roster of projects built by Atkinson alone or in partnership, reads like a history of power development in the U.S. Beginning with Grand Coulee and continuing today with dams and powerhouses for the Oroville-Wyandotte irrigation project on the south fork at the Feather River, the roster includes Dennison Dam (the world's largest earthfill at the time), Dorena Dam, Harlan Dam, Pine Flat Dam, Ross Powerhouse, the vast atomic plant at Hanford, Wash., McNary Dam and Powerhouse on the Columbia River (McNary is Guy Atkinson's particular pride as a construction job and as a money maker; the $108-million project is widely regarded as one of the most difficult jobs ever accomplished.), The Dalles Dam and Powerhouse, Hartwell Dam on the Savannah River in Georgia, Ice Harbor Powerhouse and Lock project in Washington, Success Dam in California, Trinity Dam, Oahe Powerhouse and highway construction projects ad infinitum.

ON COMPETITION: "Today a list of bidders reads like a telephone book."

Obviously, Guy Atkinson has an affinity for big jobs. He allows unblushingly that his company, with minor exceptions, doesn't undertake a contract today valued at less than $1 million.

Going back over his 86 years, Guy Atkinson points to his early training as an estimator as largely responsible for the company's present success. "I've always been careful about bidding," he says, "and I've watched the dollars as well as I could."

Today, when Guy Atkinson looks at his company and sees separate departments for engineering, estimating, equipment, fiscal and accounting, purchasing, labor relations and legal functions, insurance, salvage equipment sales, employee development and safety, he's apt to mutter something about "too damn much organization."

He complains about labor: "When we built Grand Coulee labor was getting 50 cents an hour, and today they're getting $3.08 and they don't do as much."

And he complains about competition: "It used to be you could expect only three or four bidders on a job, and now a list of bidders reads like a telephone book."

But Guy goes along, allbeit grumpily, with the changes wrought by time. Despite his years and despite his complaints, Atkinson employees can still expect at any time to find "Uncle Guy" peering over their shoulders; he has no intention of ever resigning.

"And they can't kick me out," he says, with the rare satisfaction of a man who has built monuments.

Briefs . . .

Public Works

Philip C. Doran of Seattle, who worked for the U. S. Coast and Geodetic Survey for more than 30 years, has been named director of the newly established North Carolina State Division of Geodetic Surveys, with headquarters at Raleigh, N. C.

Col. Joseph A. Smedile is the new Chicago District Engineer for the Corps of Engineers, succeeding **Col. C. F. Mitchim,** who has been reassigned to command the 35th Engineer Construction Group, Fort Wood, Tex.

Anthony N. DiNatale, Massachusetts State Public Works Commissioner, will resign his present position as he accepts a membership on the Massachusetts Turnpike Authority. Mr. DiNatale, who suffers from an eye ailment, will be succeeded as Commissioner by **Jack P. Ricciardi,** present Deputy Commissioner.

Everett V. Darlington has been named assistant Montana planning director. An industrial engineer, he has been with the State Planning Board since July, 1958.

Edward H. Cowan has been appointed Division Engineer of the Montana Division of the U.S. Bureau of Public Roads, Portland, Ore., District Engineer since 1955, he will succeed **W. B. Huffine.**

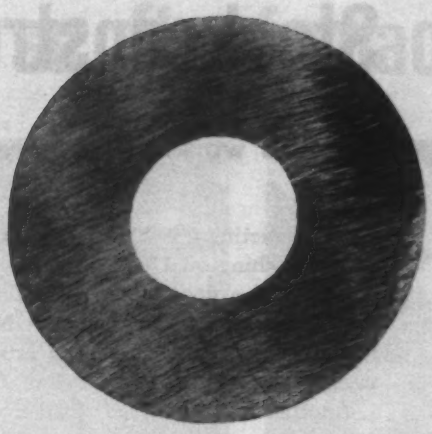
Capt. Charles G. Prahl has been appointed public works officer and officer-in-charge-of-construction for the 13th Naval District, relieving Capt. Marion B. Orr, who has retired.

Business

Arthur P. Geuss, vice president and chief engineer of Harza Engineering Co., Chicago, has been elected a director of the company. **Alfred B. Bourgo,** vice president and manager of the Middle East Area for the company, has also been elected a director. Mr. Geuss has been with Harza since 1946; Mr. Bourgo since 1948.

William K. McGrath is the Chicago district engineer, American Bridge Division of U.S. Steel Corp., succeeding **A. P. Boysen,** retired. **Ned W. Young** has been named assistant district engineer.

Cross section of average extension steel, showing distorted center hole.



Cross section of Sandvik Coromant Steel, showing perfectly uniform center hole.

See for yourself why

SANDVIK Coromant Steels

last longer on the job!

Sandvik-originated smooth rope-threads make uncoupling easy.

The completely unretouched photographs above show clearly why Sandvik Coromant large-diameter extension rods last longer! Since Sandvik takes the time—and the trouble—to cold-roll these alloy drill rods, the flushing hole is uniform all the way through—smooth as a gun barrel. And, since the hole is even and perfectly round, you set up fewer strains and stresses in use...there's less whipping... and therefore, less breakage. And, with mechanically stronger rods, we can provide larger flushing holes for faster, more complete removal of cuttings.

What's more, the Sandvik-originated rope-thread makes coupling and uncoupling a hand operation—speeds the job—and reduces chance of incipient cracks developing from wrench marks.

All in all, you can't beat Sandvik Coromant Rope-Thread Steels for fast work and long life! Available from 1½" to 2" in diameter. To set up a test on your job, write to your nearest Atlas Copco office today. Address: Dept. ENR-17.

Atlas Copco

545 Fifth Avenue, New York 17, N.Y.

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

Steel construction saves time and

Only 18 working days required to "set" the steel frame shown here

By constructing this 700-car parking facility of steel, Washington University, St. Louis, was able to add a floor after the first three floors were completed. Also, the steel framing will allow the structure to be converted to other uses if such need should develop.

Another big advantage of steel construction was an increase in usable space of 2% to 3% totaling approximately 7,500 square feet in the four floors and basement.

Steel for the new parking facility was fabricated by Stupp Brothers Bridge & Iron Company, St. Louis, Missouri. Specifications called for the use of 975 tons of USS Structural Steel in wide-flange beams for framing and column members. The floor construction is 24-gage permanent galvanized steel decking formwelded directly to steel floor joists supporting the reinforced concrete floor.

Mr. Elmer L. Deicke, Vice President of Stupp Brothers, says, "We have been using United States Steel products for years, and have always been impressed with their rapid and dependable delivery, a crucial factor in the construction industry. Their excellent service, combined with their attention to even the smallest problems, has established them as an important source of supply for us. The wide range of products available in wide-flange beams is another reason for our turning to United States

$910,000 four-story parking facility constructed with 975 tons of USS Structural Steel for Washington University Medical Center, St. Louis, Missouri. Architects: Schwarz and Von Hoefen. Contractor: Alport Construction Company. Steel Fabricator: Stupp Brothers Bridge & Iron Co.

money...adds 7,500 sq. ft. of space

Steel for solutions to our problems."

Low construction costs. Mr. Arthur F. Schwarz, Senior Partner of Schwarz and Von Hoefen Architects, says, "Construction costs are running very low for this project. Our original figure for three floors of parking space plus basement came to $3.48 per square foot for an all-steel structure. With the later addition of one floor, this figure became $3.67 per square foot, which is still substantially below the normal $4.00-plus per square foot that we estimate for this type of structure."

United States Steel offers quick deliveries, a wide variety of products, and always top quality. For further information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania. Ask for our catalog, "USS Steel Shapes and Plates." *USS is a registered trademark*

Mr. Morgan I. Doyne, the Erection Engineer (left), discusses erection problems with Mr. Roy Simpson, the Steel Construction Superintendent.

24-inch main carrying members being welded with 100% full penetration butt weld.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

This mark tells you a product is made of modern, dependable Steel

Perspective on California Water

WATER IN CALIFORNIA—by S. T. Harding. 231 pages. N-P Publications, Palo Alto, Calif. Cloth cover—$5.50. Paper cover —$4.00.

The history of California is intimately tied to development of its water resources. Thus, this book in tracing California's water history gives the reader a broad background of the history of the state.

The book is written by a man who has been personally involved in California water matters for 50 years primarily as professor of irrigation and consultant to irrigators. If the book has a shortcoming it is that Prof. Harding felt compelled to put down his water history in a limited space. The book could well have been twice as long and thus contained more detail.

California water history is traced from the days of the missions through early years when the San Joaquin Valley and Los Angeles coastal plain abounded in fast flowing artesian wells—pump drafts are now measured in hundreds of feet in the same places. Mention is made of how hydraulic mining nearly ruined the state by filling stream beds with silt that were deposited on farm lands in flood periods. The book tells how the central valley once almost entirely a swamp becoming a great lake in flood years. Now with streams controlled the area is one of the most productive in the world. It tells how California's areas assured their destiny by reaching out to bring in long-range supplies—such as Los Angeles did with the Owens Valley supply nearly 50 years ago and Southern California did with a supply from the Colorado River about 25 years ago. The book tells of the state's efforts to construct the Central Valley Project before it was taken over in the depression years by the Bureau of Reclamation as a work relief measure. And there is an excellent discourse on water laws in California. All of these things are put in perspective and related to today's problems and future requirements.

The climax of the volume is a thoughtful and fairly detailed analysis of the California Water Plan and the legislation that has placed the $1.75-billion water bond issue on the November ballot. He, in effect, supports the need for the project it will finance and the engineering work that developed the plan. But he is critical of the fact that repayment procedures are not spelled out. He concludes that the only way the people of California are going to know what they will have if the bond issue passes is for specific water use contracts to be developed, negotiated and signed before the election.

Tank and Reservoir Reinforcement

REINFORCED CONCRETE RESERVOIRS AND TANKS—By W. S. Gray. Fourth Edition, revised by G. P. Manning. 189 pages. Concrete Publications, Ltd., London. $2.80.

Extensive revisions have been made in this book to include the latest design and construction methods used in most open and covered reservoirs, tanks above and under ground, swimming pools, and industrial structures such as gas holder tanks, tar tanks and other such installations.

The book continues to serve the reader well versed in the principles of reinforced concrete design, but its contents should be useful to an engineer who has not before undertaken this class of work.

Information is also included on design and construction of tanks in ground subjected to subsidence by mining and on the stability of tanks in water-logged ground. This edition is amply illustrated with working drawings and illustrations showing work in progress. A rigorous mathematical method of calculating direct forces and bending moments on the walls of cylindrical tanks is to be found in the appendix.

Wire Reinforcement

BUILDING DESIGN HANDBOOK—Wire Reinforcement Institute, Inc., 1049 National Press Building, Washington 4, D. C. 168 pages.

This recent addition to the list of manuals on different types of construction describes and portrays with drawings and photographs the use of welded wire fabric in reinforced concrete construction. Installing concrete joists, poured gypsum roofs and fireproofing structural steel are covered.

Part II covers primarily the design and use of heavy welded wire reinforcement in flat slabs, tilt-up wall panels, retaining walls, footings and other structural members. Design tables, details, construction diagrams and specifications are included.

SUBSURFACE EXPLORATION

Dirtmovers: Profit by complete, accurate pre-bid information on presence or absence of bedrock in cut areas and depth to bedrock; establish quantities and types of materials to be excavated; locate suitable borrow pits and location of water table; determine rippability of materials; aid scheduling of equipment during excavation work.

HOW YOU

Paving Contractors: Profit by establishing gravel deposits, volume and type, nearest to the work site.

Consulting Engineers: Profit by predesign subsurface information for buildings, bridges and highways.

Highway Engineers: Establish presence or absence of rock for highway design work; pre-bid classification of materials, volume of materials, subsurface structures.

Architects: Establish stability of subsurface materials and depths for all planning.

Quarry Producers: Profit by accurate information of location and size of aggregate deposits, amount of overburden.

Mining Engineers: For example; locate pre-glacial stream channels for placer exploration, determine bedrock depths.

Bridge Builders: Economically establish stability of subsurface structure for foundations.

PROFIT WITH THE MD-1...

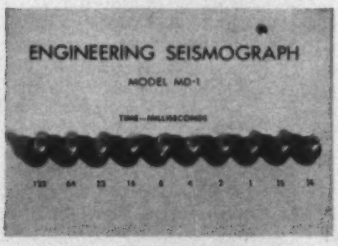
Today's profit squeeze and intense competition in the engineering and construction industry can make the MD-1 Engineering Seismograph the most important cost-saving tool you own. .

Why? Because daily throughout the world, MD-1 analyses of subsurface material conditions are being quickly converted into profits in the many ways listed above. Yet this vital tool requires no specialized training to operate. It develops accurate, reliable information in the simple manner shown here:

HAMMER PLUS GEOPHONE

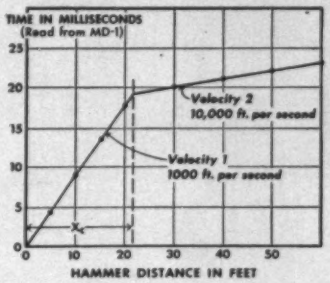
A sledge hammer is struck against a metal plate at known distances from the MD-1. As blow is struck, a switch closes on the hammer, starting the MD-1's electronic counter. The sound waves initiated by the blow are picked up by a geophone, also connected to the MD-1. The time of travel of the *first* or fastest sound wave to reach the geophone is read directly from the MD-1's electronic counter lights.

ELECTRONIC COUNTER



This travel time is determined by the depth and type of the material; the denser the material, the faster the sound waves travel.

PLOTTING MD-1 READINGS



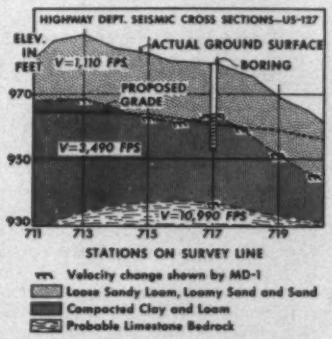
Recorded travel times are plotted on a graph. This time-distance curve represents the velocities of the materials encountered. These velocities indicate the types of materials and each break in the curve indicates a change in material.

DEPTH EQUATION

$$D = \frac{Xc}{2}\sqrt{\frac{V_2 - V_1}{V_2 + V_1}}$$

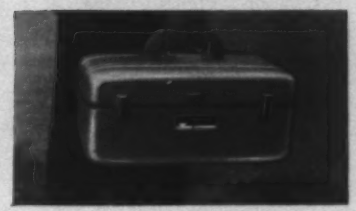
Using the above formula, the depth to denser materials or bedrock is provided. D is the depth, X_C is the hammer distance at which the velocity change occurs, V_1 is the velocity of the top material, and V_2 is the velocity of the second material. Depths to deeper layers are determined the same way.

SUBSURFACE PROFILE



The depths and materials are then marked on a profile map of the job so that subsurface conditions will be considered in the planning and bidding of the work.

PORTABILITY



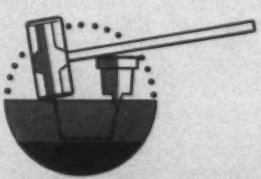
Because of its small size and light weight, the MD-1 can easily be used in areas inaccessible to drilling rigs. Also important, boulder strewn soils do not impair accuracy of findings as sometimes occurs with probing devices. Where rippability is a factor, a table of velocities for rippable rock has been prepared by the Caterpillar Tractor Co. for use with the MD-1.

The reliability and dependability of the MD-1 is user proved over a number of years on thousands of jobs by operators all over the world.

See how you can profit on your next job with this simple to operate tool of the new age in earthmoving. Ask for a demonstration—operate it yourself after a few minutes instruction.

Some MD-1 Owners

Contracting & Materials Co.
Nello L. Teer Co.
Hunting Survey Corp., Ltd.
Peter Kiewit Sons' Co.
Dickerson, Inc.
Euclid, Division of GMC
Caterpillar Tractor Co.
Michigan State Highway Dept.
Ontario Dept. of Highways
Alcoa (Aluminum Co. of America)
U. S. Bureau of Public Roads
U. S. Corps of Engineers
DuPont



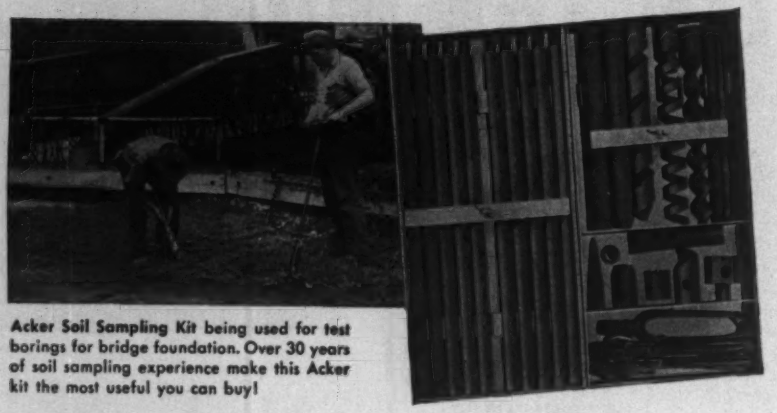
Geophysical
SPECIALTIES COMPANY
15409 Robinwood Drive • Hopkins, Minn.
Phone: WEst 8-6877 Cable: Geospec

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, *you avoid* costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

WATER SUPPLY

Economics, Technology, and Policy

A book of major importance – thoroughly assesses our water resources and utilization, and demonstrates that existing supplies are grossly misallocated. Alternative lines of future development are suggested, together with economic criteria on which water supply use should be based.

Includes full-scale evaluations of two important "water crises" and proposals for their solution – the *Cannonsville Project* for New York City, already under construction, and the pending *Feather River Project* in southern California, which, if approved in this November's election, will cost Californians three billion dollars. $7.50

By Jack Hirshleifer, James C. De Haven, and Jerome W. Milliman

A RAND Corporation Research Study
400 pages. Maps, tables, charts.

through your bookseller, or from
UNIVERSITY OF CHICAGO PRESS
5750 Ellis Avenue, Chicago 37, Illinois

Self-leveling level saves up to 50% surveying time

The Ertel Level, proved successful throughout the United States, automatically assumes a truly horizontal line of sight once it has been approximately leveled by its circular bubble.

The self-leveling system consists of two carefully-positioned prisms which are moved by a gravity-operated pendulum to a precise realignment with any accidental change of instrument setting. *During extensive leveling operations, the instrument cuts working time as much as 50%.*

The Ertel INA Level—made in West Germany—is 5⅛" high; has a 30x telescope; weighs 19¼ lbs. (including tripod). Write for Bulletin INA which gives complete data.

PRECISION INSTRUMENTS INC.
1900 FIFTH AVENUE, TROY, NEW YORK

Brief Reviews . . .

BEACH EROSION CONTROL REPORT ON SHORE OF LAKE ERIE FROM MICHIGAN-OHIO STATE-LINE TO MARBLEHEAD, OHIO—Joint Study of State of Ohio and U.S. Corps. of Engineers. District Engineer, U.S. Army Engineer District, 1101 Washington Blvd., Detroit 26, Mich. $5. Emphasis is on improvement for publicly owned property. Plan of improvement and recommendations for beach erosion control at Crane Creek State Park, 16 miles east of Toledo, Ohio. Recommends Federal participation be authorized in amount equal to one-third of initial cost of construction—almost $2 million. Report is being referred for review to the Beach Erosion Board, Washington, D. C.

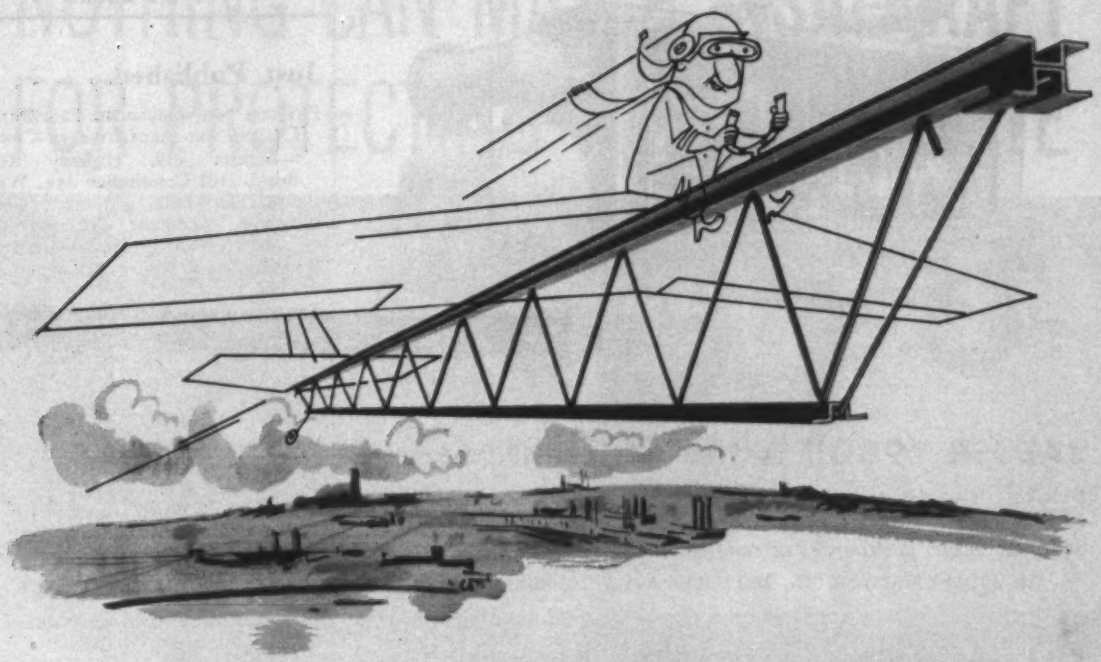
HANDBOOK ON PROGRAMS OF THE U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE—Prepared by the Office of Program Analysis, Office of the Secretary, Department of Health, Education and Welfare. 200 pages. U.S. Government Printing Office, Division of Public Documents, Washington 25, D. C. $1.50. Volume to be prepared annually brings together information about the programs of each major unit of the Department, includes five-year summary of fiscal, personnel and other statistics.

HOW THE BUREAU OF FOREIGN COMMERCE WORKS FOR YOU—By the Bureau of Foreign Commerce, U.S. Department of Commerce. 20 pages. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. Booklet lists locations of U.S. Department of Commerce Field Offices, describes the Bureau's functions and lists its publications.

SELECTED REACTORS OF THE POWER REACTOR DEMONSTRATION PROGRAM, TID-3556—Compiled by James M. Jacobs, Office of Technical Information, U.S. Atomic Energy Commission. 34 pages. Office of Technical Services, Department of Commerce, Washington 25, D. C. 75 cents. Literature search covers 310 reports available for public sale, dealing with ten reactors of the AEC Power Reactor Demonstration Program.

LABORATORY FACILITIES IN THE UNITED STATES FOR RESEARCH ON WATER GRAVITY WAVES—by J. W. Johnson. 35 pages. Council of Wave Research, The Engineering Foundation, University of California, Berkeley, Calif. Booklet lists government, industry, and educational facilities available for research on water gravity waves. Free.

CONCRETE IMPROVEMENT—A manual on recommended concreting practices developed primarily for the Detroit, Mich., area, has been published by the Concrete Improvement Board of Metropolitan Detroit. The compilation includes residential paving, house basements, winter concreting, and hot weather concreting.



You can count on on-time-delivery and faster building with Sheffield Joists

What's the secret of faster construction with Sheffield Open Web Steel Joists? No secret at all. Just this simple set of facts:

1. Sheffield Joists are delivered to the job completely fabricated and tagged, ready for immediate placing. They're light enough for easy handling and setting.
2. This light weight (with high strength) makes possible important savings in building time and costs from foundation to roof. Lighter framings and footings, far less dead weight, more column-free space. And just about endless design possibilities.
3. Because Sheffield joists are so quickly installed, they provide a working platform right away. No temporary framework needed. Lath and decking can be applied immediately. Other trades proceed without delay. Building gets under weather-protected cover faster.
4. Open-web design allows fast placement of conduits, pipes and ducts. Recessed lighting is simplified.

One more, mighty important way you save time. It's the speedy delivery you get from Sheffield's strategic locations, in any quantity. L-Series (longspan) and S-Series (shortspan). Get all the facts from your nearest Sheffield office.

SHEFFIELD

ARMCO

Open Web Steel Joists

S-series L-series

Design Data Available

For complete data and S.J.I. load tables for Sheffield Joists, plus the latest revision of the Standard Specifications of the Steel Joist Institute, address: Sheffield Division, Sheffield Station, Kansas City 25, Mo.

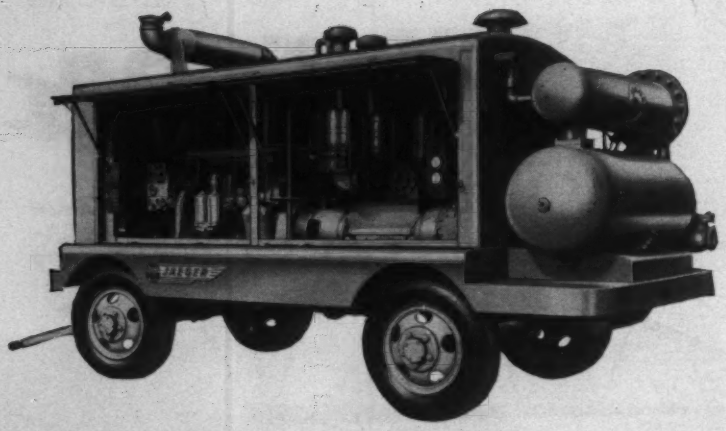
SHEFFIELD DIVISION

Sheffield Plants in Kansas City, Tulsa and Houston

ARMCO

ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products



JAEGER "900" is the efficient rotary

Delivers in excess of 900 cfm at a fuel-saving, engine-saving 1700 rpm, using the same GM 6-110 diesel which others operate at 1800. See your Jaeger distributor, or send for Catalog.

THE JAEGER MACHINE CO., 200 Dublin Ave., Columbus 16, Ohio

NO POWER NEEDED for these Sound Powered

TELEPHONES

They operate in any emergency over a distance of many miles. Can be moved with the job as it progresses or serve permanently. Indoor and outdoor models. Selective ringing, common talking.

Write for catalog

HOSE-McCANN TELEPHONE CO., INC.
25TH ST. & 3RD AVENUE. BROOKLYN 32, N. Y.

PRACTICAL, RUGGED MINE CARS
Side Dump and Rocker Dump cars, 24" gage. Tunnel cars, 18" and 24" gage. Various capacities. Ask for Bulletin No. 18.

MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

ELGOOD
Hydraulic & Mechanical
JACKS
Capacities to 600 Tons—48" Travel

Jacking Equipment For
Pipe Pushing
Erection
Pile Driving
Pile Turning
Slip Forms
Tunnel Shields
Prestressed Concrete
many other applications

RENTALS — SALES — DESIGN
Large Stock — Immediate Delivery
Write for Job Fact Sheets

ELGOOD EQUIPMENT CORP.
373 Ten Eyck St., Brooklyn, N.Y.
HY 7-5445

. . . Books

Just Published . . .

PHYSICAL AND CHEMICAL PROPERTIES OF CEMENT AND AGGREGATE IN CONCRETE—Bulletin 239. Highway Research Board, 2101 Constitution Ave., Washington, D.C. $1.20.

HIGHWAY ACCIDENT STUDIES—Bulletin 240. Highway Research Board, 2101 Constitution Ave., Washington, D.C. $1.00.

SOIL STABILIZATION WITH ASPHALT, PORTLAND CEMENT, LIME AND CHEMICALS—Bulletin 241. Highway Research Board, 2101 Constitution Ave., Washington, D.C. $2.40.

DENSITY, ABSORPTION AND SPECIFIC GRAVITY TESTS OF AGGREGATES, BITUMINOUS MATERIALS, BITUMINOUS MIXTURES AND SURFACES—Bibiliography 25. Highway Research Board, 2101 Constitution Ave., Washington, D.C. 60¢.

A STUDY TO IMPROVE BITUMINOUS BUILT-UP ROOFS—Monograph No. 1. Printing and Publishing Office, National Academy of Sciences-National Research Council, Washington 25, D.C. $1.50.

HIGHWAY BRIDGES: PAINTING AND DOCK CONSTRUCTION—Bulletin 243. Highway Research Board, 2101 Constitution Ave., Washington, D. C. 60¢.

BRIDGES: BEARING PADS, FOUNDATIONS, SCOUR AND WATERWAYS—Bulleltin 242. Highway Research Board, 2101 Constitution Ave., Washington, D. C. $1.40.

TEMPERATURE IN BITUMINOUS MIXTURES—Special Report 54. Highway Research Board, 2101 Constitution Ave., Washington, D. C. $1.00.

PROCEEDINGS OF THE ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS FOR 1959—Ward Parr, Secretary-Treasurer; Association of Asphalt Paving Technologists, 1224 East Engineering Building, Box 619, Ann Arbor, Mich. $6.50.

STRUCTURAL MECHANICS—by Samuel T. Carpenter. 538 pages. John Wiley & Sons, Inc. 440 Fourth Ave., New York 16, N. Y. $9.50.

CONCEPTS OF THERMODYNAMICS—by Edward F. Obert. 528 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. $11.00.

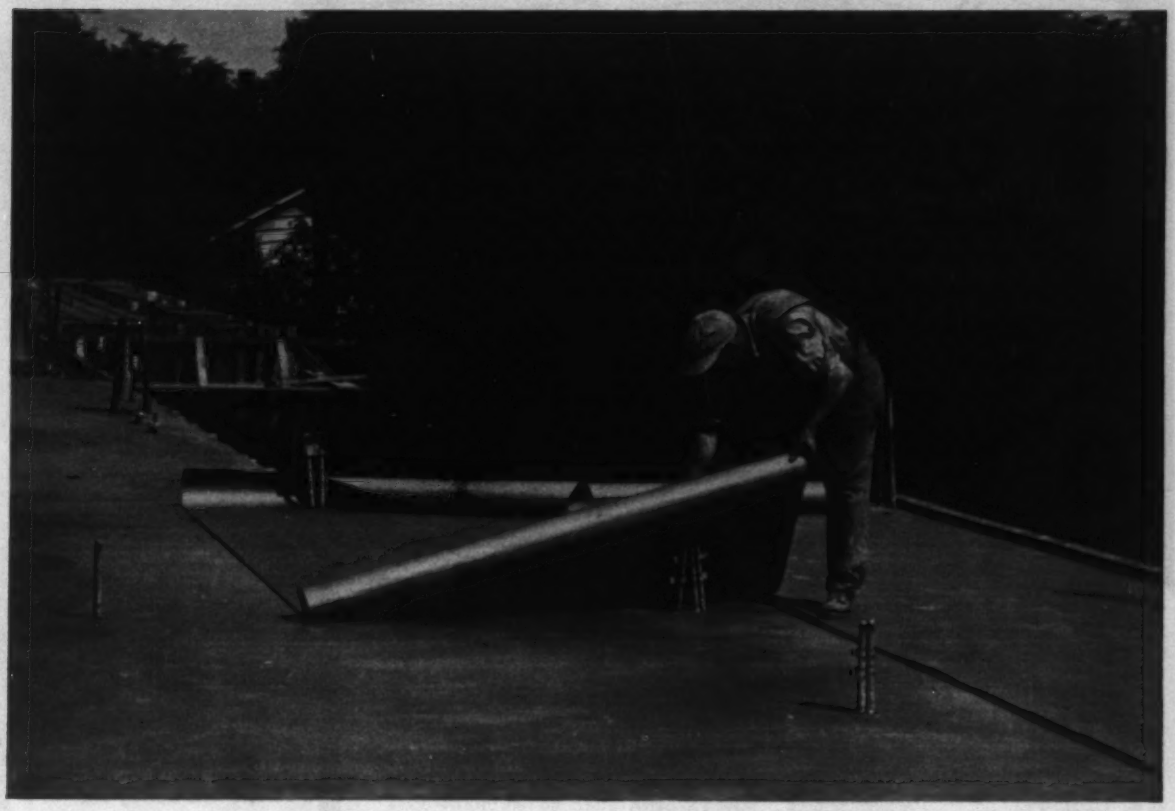
DESIGN OF MODERN STEEL STRUCTURES—by Linton E. Grinter, 491 pages. The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. $10.00.

COMPLEX VARIABLES AND APPLICATIONS—by Ruel V. Churchill. 297 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. $6.75.

U.S.S.R. LITERATURE ON AIR POLLUTION AND RELATED OCCUPATIONAL DISEASES—The 214-page book is first in a series of survey reports to be completed under a U. S. Public Health Service research grant by B. S. Levine. Order OTS 60-21049 from OTS, U. S. Department of Commerce, Washington 25, D. C. $3.50.

A DIGEST OF STATE AIR POLLUTION LAWS—Public Health Service Publication No. 711, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 75 cents.

NOTHING CAN MATCH **SISALKRAFT** FOR PROTECTING NEW CONCRETE



(1) FOR DURABILITY
(2) FOR EASY HANDLING
(3) FOR RE-USES

Tough Sisalkraft papers remain the most practical method of covering newly-poured concrete. These reinforced, scuff-resistant papers have "body" . . . handle well even on a windy job. In addition to low material cost, quick and easy application means minimum labor cost.

The Sisalkraft line includes Orange Label Sisalkraft,® reinforced waterproof building paper; Copper Armored Sisalkraft,® electro sheet copper flashing; Sisalation,® reflective insulation; Moistop,® reinforced paper and polyethylene vapor barrier; Vaporstop, rot-resistant vapor barrier; Seekure*, non staining waterproof paper; Sisal-Glaze*, Eskay-Lite* and Sisalite,® clear plastics.*

**Reg. Applied for*

Concrete floors and slabs with clean, hard, dust-free surfaces are assured. Widths from 36″ to 96″, special rolls up to 26½′. Exclusive "Bleached White" Sisalkraft for highway curing.

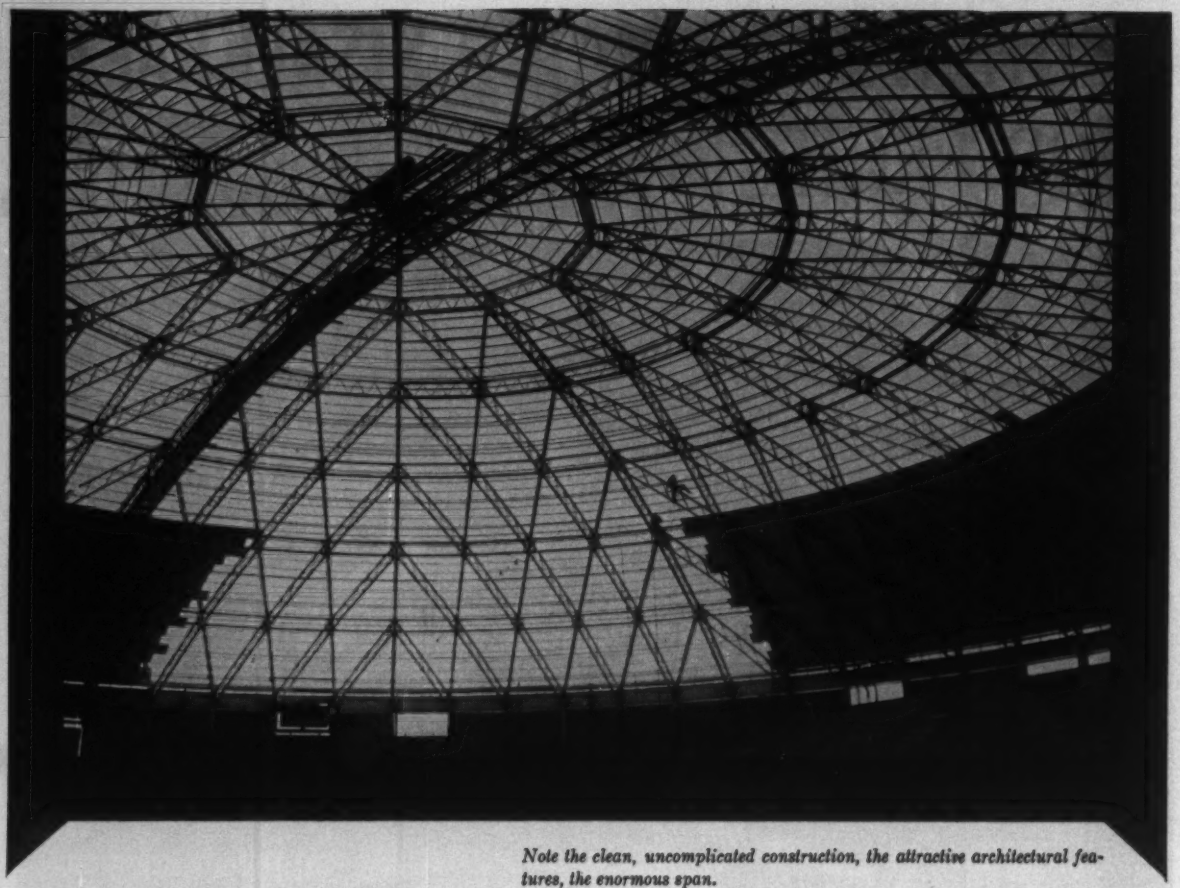
NEW: The Sisalkraft Joint Former offers a new low cost way of forming contraction joints with removable plastic strips. Write for bulletin to American Sisalkraft Corporation, Attleboro, Massachusetts.

SISALKRAFT

AMERICAN SISALKRAFT CORPORATION

Chicago 6 • New York 17 • San Francisco 5

SISALKRAFT PRODUCTS ARE AVAILABLE IN CANADA THROUGH MURRAY-BRANTFORD LIMITED, MONTREAL



Note the clean, uncomplicated construction, the attractive architectural features, the enormous span.

There's an Inland Structural Steel for every new construction idea

Domes

making full use of the versatility of structural steel, easily span tremendous unobstructed areas—meet every requirement for ease and speed of erection, light weight, beauty and economy.

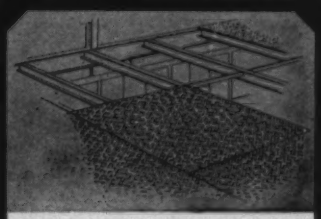
Prefabricated structural steel members are delivered to the site ready for immediate use. Erection is speedy and uncomplicated, with little field fabrication required. Ribs can be small trusses, light weight I-Beams or similar structurals. The light weight, self-supporting nature of such domes eliminates the need for the dead weight of heavy wall construction. Temporary steel columns support the compression ring during erection—eliminate expensive falsework.

Temporary supports of steel, easily salvagable, are used to support the trussed ribs during construction.

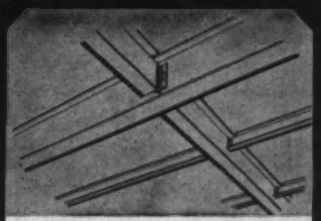
For complete information on the considerable savings achieved on many steel domes, see your local fabricator who now has structural steel available in all shapes and sizes—or call the American Institute of Steel Construction office in your area.

Use Steel *For Modern Construction*

other Inland construction products

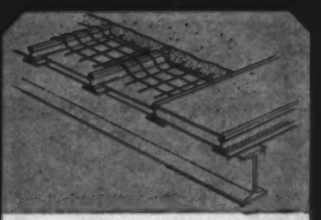


4-WAY® SAFETY PLATE has come into general use as an integral, prefabricated part of the supporting structure, providing durable floors and added strength.



WIDE FLANGE BEAMS are the answer wherever more strength with less weight, longer spans with more open floor area, is the goal. Sizes from 8" to 24".

INLAND ENAMELING IRON is ideally suited to curtain-wall and enameled panel systems, providing strength, beauty and unlimited design possibilities.



INLAND SUB-PURLINS are especially designed to provide a lighter, more efficient member for shorter-span roofs. They come cut-to-length and mill painted.

INLAND

INLAND STEEL CO.
30 West Monroe Street
Chicago 3, Illinois

River, road and rail crossings needed for . . .

Rhode Island Water Main

Water main extension to provide better pressure to the eastern section of Woonsocket, R. I., crosses the Blackstone River, where a 320-ft section of subaqueous 16-in. line must be laid below the river bed. Metcalf & Eddy, Boston, is the consultant; David A. Duncan their project engineer.

Contract went to Capaldi Bros. Corp. of Providence on a low bid of $275,225, which was only $900 under the second bid and less than 4% under the high bid.

Work covers furnishing, laying, jointing, testing and sterilizing the principal mains and supply lines from No. 1 pumping station to Cumberland Hill Road plus all incidental work.

December, 1959 wage rates in effect at time of bidding include: Common labor, $2.60 per hour; carpenters, $3.325; pipe layers, $3.60; divers $4.75; divers helpers, $2.60; tractor operators, $3.225; trenching machine operators, $3.95.

Bidding included:

1C Capaldi Bros. Corp., Providence, R. I.	$275,225
2 C. Brito Constr. Co., Bristol, R. I.	276,132
3 C. L. Guild Constr. Co., Inc., E. Providence	288,210

Bids: 6-9-60 Items	Unit	Quantity	Unit Prices 1C	 2
CIP water main, f-l-j-t-s				
16" ϕ	lf	3,400	$15.00	$13.07
16" subaqueous	lf	312	145.00	97.37
16" at WTP site	lf	210	35.00	108.66
30"	lf	630	44.00	46.64
Junction chamber, compl	ls	1	1,000	1,536
RCP, 48" f-l-j	lf	105	20.00	22.37
Headwall, compl	ls	1	350.00	768.00
RRXing 30" Pipeline	ls	1	6,000	6,940
Exc & backfill, above gr	cy	50	5.00	10.00
below gr	cy	100	10.00	12.00
Backfill, grav, screened	cy	100	5.00	5.00
bank-run	cy	700	3.00	3.50
Exc, rock & disp	cy	2,300	14.00	20.00
Blowoff valve assemb A	ls	1	600.00	682.94
B	ls	1	600.00	683.64
C	ls	1	600.00	658.58
Hydrant & appurt	ls	1	600.00	685.10
Connect to exist facil	ls	1	10,000	5,848
Pave, replace tp 1A rd	lf	20	10.00	6.00
tp 2B rd	lf	800	3.00	2.50
tp 4 rd	lf	1,000	1.50	0.60
temporary	lf	100	0.50	0.60
Riprap	sy	2,050	2.50	8.00
Lumber, lip	Mbf	5	200.00	200.00
Clean up	ls	1	1,000	1,000
RCP supply line f-l-j-t-s				
30" ϕ	lf	2,110	29.00	22.86
Air valve install, compl	ea	2	500.00	465.30
Rd Xing, f-l-j-t,				
CIP distr main 20" ϕ	ls	1	4,000	1,647
sewer, 8"	ls	1	500.00	585.47
wash wtr line, 42"	ls	1	5,000	2,803
influent line, CIP 24"	ls	1	3,000	2,876
Sleeve, WI 2", f & i	ls	1	50.00	55.50

Completion schedule: 270 calendar days
f furnish l lay j joint t test s sterilize i install

Skew Bridge for Indiana

Four-span bridge with 7-deg right skew for the State Highway Department of Indiana drew a low bid of $220,772 from Reith-Riley Construction Co., Inc. of Goshen, Ind. It crosses Interstate Route 69 on State Road 14 west of Ft. Wayne.

Bridge superstructure will be reinforced concrete girder and continuous steel beam construction on steel encased concrete pile end bents. Two 39-ft roadways, two 2-ft walks and a 10 ft center curb are specified plus 0.016 miles of approach grading. Separate prices are bid on furnishing and driving the steel pile shells.

Work includes 1,209 cu yd of concrete, 274 tons of structural steel and 399 lin ft of aluminum railing.

Wages to be paid for common labor are $2.30 plus $0.075 welfare; $3.425 for carpenters; $3.80 plus $0.10 for ironworkers; $3.425 for pile drivers.

This is how the bidding lined up:

1C Reith-Riley Constr Co, Inc, Goshen, Ind	$220,772
2 Moellering Constr Co, Inc, Ft. Wayne, Ind	225,847
3 Kahl & Mahon, Liberty, Ind	242,885

Completion date: 3-31-61 Liquidated damages: engineering costs

Bids: 6-29-60 Item	Unit	Quantity	Unit Prices 1C	 2
Conc, cl F	cy	855.2	$62.60	$64.20
D	cy	50.6	62.60	74.20
E, abv ftgs	cy	158.7	62.60	60.00
in ftgs	cy	118.5	62.60	60.00

Bids: 6-28-60 Item	Unit	Quantity	Unit Prices 1C	 2
Steel, reinf	lb	207,951	0.113	0.119
Equip, pile driv, furn	ls	1	500.00	480.00
Excav, common	cy	14,100	0.73	0.46
Borrow, gr B spec	cy	2,085	2.30	1.65
Sodding	sy	295	0.65	0.75
Signs, warning	ea	12	75.00	85.00
Barricades, std tp A	ea	2	150.00	125.00
Steel pile shells, 12" f	lf	720	5.00	4.59
dr	lf	720	1.00	1.50
Aluminum rail, tp 1	lf	398.9	3.20	3.05
Railing concrete	cy	25.6	96.00	89.20
Excav, fndn, uncl	cy	585	4.00	4.00
Steel, struct 274 tons	ls	1	74,600	80,700
Conc slopewall, 4"	sy	823	4.80	4.95
Temp runaround	ls	1	2,200	4,800
Conc pave, plain 7"	sy	2,841	5.00	4.67
Pipe, cl 5 12"	lf	84	3.50	3.33
Remove pavement	ls	800	0.90	0.85

Trailer Park for County Fair, California

Trailer park will have space for 70 trailers for which 131,430 sq ft is allotted plus 850 sq ft for a 25 x 34-ft bath house designed by the Public Works Department, County of Alameda, Hayward, Calif. The contract went to Silva Brothers of Centerville, Calif. at $92,972 on a bid 1.1% below the engineer's estimate.

Cost per trailer is $1,328. Space allowed per trailer is 1,878 sq ft.

The new park is to provide trailer space for horse owners during the Fair and the horse training season.

Materials Prices Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. per cy
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	90 cy & over
Atlanta	$4.38at	$3.88at	$3.68at	$3.10at	$3.10at	$1.85ta	$2.18a	$2.33a	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.42a	3.91a	3.56a	2.80ta	2.80ta	2.25ta	2.85ta	2.90ta	2.05ta	2.00ta	.18a	.18a	13.50ou
Birmingham	4.43c	3.50cf	.....	2.53na	2.53na	2.13na	2.75a	2.75a	1.65d	1.75d	.19	.19	14.25q
Boston	5.83ip	4.52ap	4.90imp	3.00qas	3.00qas	3.00qas	1.75qas	1.85qas	.....	.....	.23o	.275ao	15.00q
Chicago	4.52ag	4.02ag	4.15g	3.78ta	3.78ta	4.13tbe	3.95tbe	3.95tbe	2.25ta	2.25ta	.261e	261be	13.50s
Cincinnati	4.84c	4.34c	4.31c	2.29tcu	2.34tcu	2.44tcu	2.55tcu	2.74tcu	1.80u	1.80u	.19o	.25ao	15.00qr
Cleveland	4.77/.84‡	.....	4.19tae	.....	2.25ae	1.75ae	2.70fy	2.70fy	2.20‡f	2.20‡f	.....	.23f	17.25u
Dallas	3.65a	3.25a	3.53a	2.65ta	2.75ta	1.90‡	2.47	2.67	.....	.....	.....	.285	12.10u
Denver	4.89a	4.39a	4.89	1.95‡	2.15‡	1.42tb	.....	3.00tz			.25	.27ao	11.90
Detroit	4.50a	3.89aqq	3.97a	2.50cc	2.50cc	2.16cc	2.80ddbm	2.80ddbm	3.15ddaa	3.50ddayaa	24u	.277au	15.50eaa
Kansas City	4.52a	3.92a	4.30a	.....	.....	1.85ta	2.00ta	2.00ta	.....	.....	.22a	.26e	14.50
Los Angeles‡‡	5.12eh	4.68eh	5.60c	2.56tat	2.76tat	2.41tat	2.41tat	2.46tat	.....	.....	.225f	.285	13.45bkz
Minneapolis	4.66a	4.15a	4.25a	2.70tae	2.70tae	1.60tae	4.00tae	4.00tae	.....	.....	.20q	.....	14.55f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90tat	2.15tat	2.40ta	1.90tt	2.15tt	2.00t	2.00t	.20t	.28tt	10.80akt
New Orleans	4.17b	3.65b	3.97b	2.61b	2.61b	2.16b	.....	.....	1.65d	1.75d	.25r	.25	14.00e
New York	4.68a	4.18a	3.75a	.....	3.20bk	2.30bkw	2.85bbb	2.85bbb	.....	.....	.285nwo	.325ro	17.60ay
Philadelphia	4.49‡ae	3.99‡ae	3.51‡e	1.95ta	1.95ta	1.55ta	2.00ta	2.30ta	2.25ta	2.25ta	.....	.725w	13.90z
Pittsburgh	5.65bfk	4.62bj	5.00bfj	2.68‡aqy	2.68‡aqy	3.08‡aqy	2.00‡aqy	2.00‡aqy	2.10w	2.10w	.22rz	.23rz	16.15s
St. Louis‡f	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75‡s	1.75‡s	.....	.....	.26‡r	.32‡ae	13.65/14.10q
San Francisco	4.84c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	.....	.....	.24	.28cf	13.00ay
Seattle	4.47‡a	3.75aq	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	.....	.....	.288s	.384cs	14.70‡
Toronto	5.20i	3.84t	5.20i	2.40	2.40	2.05	2.40	2.40	3.40	2.40	.26	.285cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. ƒ Add 4% sales tax. ƒƒ Add 2% intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *i F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days. *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 8% disc. 15 days. *bb Less 2% 25th of month *cc F.o.b. plant cl *dd F.o.b. plant tl

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 16. *q Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 8% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 16. *u Less 8% disc. 10 days. *v Less 12% disc. 15th. *w Made to order.

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more *c 10-100 cy. *d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 8% mun. & prov tax. *l 1:2½:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢. 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable. *Prices guaranteed through December 31, 1960*

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.55	Toledo, O	$3.60
Clinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.50
Kingsport, Tenn	3.55	Hannibal, Mo	3.50	Duluth, Minn	3.60	Wyandotte, Mich	3.60	Green Bay, Wis	3.50
West Des Moines, Iowa	3.60	Northampton, Pa	3.50	Hudson, N. Y	3.50	Buffalo, N. Y	3.55	Ironton, O	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can	2.81
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.65	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.70PS	$45.00PS	$0.2740PS	$0.2355	$0.1308uS	$0.345uS	$0.135uS	$0.245	
Baltimore	e	e	e	21.00i	.....	.09i	0.18 ·	.09iuE	.18iuE	.09‡	0.19i	
Birmingham	.....	66.00i	.....	25.12	25.69O	.1069	0.1093O	.1162u	.1185Ou	.1068O	.1069	0.1093O
Boston				22.00apS	46.00apS	22.00auS	46.00auS	.105auF	.32auF	.14aOR	.18OR	.....
Chicago	150.00‡e	98.00‡eb	3.95/4.00‡ej	22.00b	32.00b	20.40bs	30.40bs	.10buH	.18buH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165uSU	.....	.109	.1365	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00tnA	.....	.1165tuAF		.....	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	.....	62.00a	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	114.00	.....	31.50R	.....	32.20uR	.....	30.24uIR	.....	27.84	.....	.24
Kansas City	e	e	e	18.75cl	.....	18.75cl	.....	.0875J	.....	.0675c	0.10	.....
Los Angeles‡	e	e	e	19.00dmz	.....	19.00dmz	.....	20.50dKz	.....	19.50dmo	21.40iXy	.1842‡Xy
Minneapolis	.....	.....	3.73h	23.70	.....	23.70r	.....	.105u	.....	0.95	.1375bb	.....
Montreal	e	e	e	30.50n	43.60n	.167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	.....	20.00es	.....	.095eu	.....	.085eB	.095eBL	.1905eB
New York	.....	.....	3.70f	20.99mO	42.95mO	20.99mO	42.94stO	9.61uF	19.01uF	.....	9.68u	19.11u
Philadelphia	.....	.....	.....	21U	.....	21U	.....	.095Uw	.....	.095U	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20is	.....	31.20is	.....	.1403IS	.....	.141S	.1403i	.....
St. Louis‡‡	.....	.....	.....	19.74f	21.65	.1825f	.1825	.09fw	.092fw	0.165f	.1825O	.30R
San Francisco	.....	70.00	.....	22.50qdd	41.00qdd	22.50qkvdd	40.00qkvdd	22.50qNdd	46.50qNdd	23.25qvWdd	23.50qvXdd	.2023qXdd
Seattle	.....	.....	.....	24.00s	47.00h	33.00secc	38.50	25.50KE	.....	28.75hsY	25.80hsX	49.80hsX
Toronto	.....	120.00‡	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.2122ee	.2682ee

‡ Delivered. ƒ Add 4% sales tax. ƒƒ Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3½ x 8. *c 2½ x 8½ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3½ x 8½. *j 2½", 6 lb. tr. *k Used. *l Redshale. *m Pine: oak $8.57. *n Truck del. *o Less $1/M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 8% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0-5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1-5, RC 1-5, $0.0918. *N MC 3. *O Truckload. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *dd ess disc of $1 ton. ee 45 Imp. gal. drums *ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Sep. 22; Next, Oct. 20.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Sep. 29; Next, Oct. 27.
- Wage Rates, Building Board Insulation: Last, Sep. 29; Next, Nov. 3.
- Iron & Steel Products, Pipe: Last, Sep. 15; Next, Oct. 13.

CLEVELAND DIGS SHALE AND ROCK 3-5 FT. DEEP FOR HIGHWAY DRAINAGE

THE JOB: 20 miles of drainage trenching in both inner and outer shoulders of five miles of dual highway for the relocation of U. S. Route 25 near Middletown, Ohio.

CONDITIONS: trench to be cut to grade, 18 inches wide, 3 or 5 feet deep depending on inner or outer shoulder, through very densely compacted shale and rocky material, further densified because much of the grade carried hauling equipment all through a winter, spring and summer.

PERFORMANCE: despite need to replace worn bucket teeth more frequently than usual because of the tough digging, a Cleveland J-40 dug the trench to accurate grade at the rate of 1,800 to 2,000 feet per 9 hour day.

J-40 FEATURES

- Stability—on wide-spaced crawlers, 1000-hour-lubricated
- 100% control of every operation at the operator's seat
- V conveyor for faster, higher, more efficient spoil discharge
- Pulley-enclosed dual, independent, conveyor drive
- Automatic conveyor shifting from side to side
- Over 30 non-slipping digging speeds
- Digs trench 17½ to 30 inches wide, down to 5½ feet deep.

WRITE TODAY for Bulletin L-110, a detailed report on the performance of the J-40 on this tough highway drainage job.

CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Mass., Falmouth**—ADDNL. BOMARC FACILITIES—BA 10/11—U. S. Eng., 424 Trapelo Rd., Waltham, addnl. BOMARC facilities 1M 99B, Otis Air Force Base, ENG-19-016-61-8. $2,000,000-$3,000,000. Plans deposit $10. Fay, Spofford & Thorndike, Inc., 11 Beacon St., Boston, engr. CD 9/8.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Marinucci Bros. & Co., Inc., 51 Ceylon St., Dorchester, Mass., CA $8,644,783, est. $7,379,375, hy. and bridge Int. Rte. 93-1-93-(18)-1&V-309(6), Medford. Bids Aug. 9, awarded Sept. 20. CD 8/11, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St.,
M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., CA $2,133,828, section Int. Rte. 95.1-95-1(7)4, Attleboro and North Attleboro. Bids July 19, awarded Sept. 20. CD 7/21, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Dravo Corp., Contr. Div., Neville Island, Pittsburgh, Pa., CA $7,197,555, est. $7,397,555, substructure, bridge over Taunton River, Int. Rte. 195.1-195-3(21)-11 Contr. 1, Fall River and Somerset. Bids Aug. 2, awarded Sept. 20. CD 8/4, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Marinucci Bros. & Co., Inc., 51 Ceylon St., Dorchester, Mass., CA $3,320,338, hy. and bridge, Int. Rte. 195, 1-195-3(20)B, Somerset and Swansea. Bids July 26, awarded Sept. 20. CD 9/1, under LB.

BUILDINGS—LB & CA

▲ **C. A. Batson Co.**, 26 Arlington St., Brockton, Mass., LB $2,836,598, Mass. Federal Proj. 19R-3044, SENIOR HIGH SCHOOL and VOCATIONAL SCHOOL, ATTLEBORO, MASS. City, Sanford St., Attleboro, Mass. Bids Sept. 20. CD 8/12.

▲ **Tocci Bros. Constr. Co. Inc.**, 38 Colonial Ave., Newtonville, Mass., LB $2,498,000, Base Bid, HIGH SCHOOL, Bolton St., MARLBORO, MASS. City, City Hall, Marlboro, Mass. Bids Sept. 21. CD 9/13.

▲ **John Bowen Co., Inc.**, 173 Boston St., Dorchester, Mass., CA $3,500,000, STUDENTS and FACULTY CENTER, NEWTON, MASS. Boston College, 140 Commonwealth Ave., Newton, Mass. M. A. Dyer Co., 24 School St., Boston, Mass., archt.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., West New Brighton**—SCHOOL—BA 10/13—Deputy Supt. Schools, Office Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, except electrical work and lighting fixtures, Junior High School 27, northeast corner of Clove Lakes Pl. and Elizabeth Sts., Richmond Boro. Plans deposit $25 general, $10 mechanical trades. CD 4/4.

▲ **N. Y., Brooklyn**—SCHOOL—BA 10/14—Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures addn., modernization P.S. 236, Avenue U between E. 63 St. and E. 64 St., Brooklyn Boro. Plans deposit $25 general, $10 mechanical trades. CD 1/22.

▲ **N. Y., Jericho** — SCHOOL — BA 10/19 — Bd. Educ. Union Free School Dist. No. 15, elementary school, Cantiague Rd. $1,800,000. Knappe & Johnson, 2110 Northern Blvd., Manhasset, archts. CD 6/28.

▲ **N. Y., New York**—SCHOOL—BA 10/20—Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for P.S. 181 (new P.S. 20), Essex, Norfolk and Stanton Sts., Manhattan Boro. Plans deposit $25 general, $10 mechanical trades.

▲ **N. Y., New York** — SCHOOL — BA 10/20 — Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City, Zone 1, general contract plumbing and drainage, heating and ventilating, electrical work and lighting fixtures P.S. 79, Madison Ave. and E. 117 St., Manhattan Boro. Plans deposit $25 general, $10 mechanical trades. CD 1/25.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—**Savin Bros., Inc.**, 522 Cottage Grove Rd., Bloomfield, Conn., CA $6,663,660, c. conc. pavt. 8.26 mi. (2.98 acc.),2 brs. comp. I-beam, Windsor-Deposit SH 5338 Bettsburg-McClure, Pt. 2, SH 8285, Rtes. 17 & 41, FARC 60-121, Proj. No. F-344(27), Broome Co.; CA $1,978,130, grade, drain, 6.52 mi. b. conc. 0.64 mi. (5.25 acc.) one railroad bridge, etc. Taconic State Parkway, Rte. 203, New York State Thruway, Berkshire Section, Town Rd., Chatham-Red Rock, County Rd. 24; Town Rd. (Hartigins Rd., Chatham-East Chatham, SH 1933, Town Rd., Chatham Center-East Chatham, T.S.P. 60-2, Columbia Co.;
N. Y.—**Bero Constr. Corp.**, Box 70, Waterloo, N. Y., CA $1,611,816, c. conc. 2.96 mi., b. conc. 0.36 mi., etc. Geneva-MacDougall, SH 8183 Geneva-Waterloo, SH 5087, Geneva-Waterloo, Pts. 2 & 3, SH 8240, Rtes. 5, 20, 96A, FARC 60-127, Proj. F-452-(8) U-452(8) U-406(5) UG-452(8), Seneca Co. Grand total $10,253,606. Bids July 28. CD 9/8, under LB.

▲ **Westinghouse Air Brake Co.**, 350 5 Ave., New York 1, N. Y., LB $7,688,171 (2 bidders), furnishing, installing block signaling and interlocking equip. for rehabilitation Lexington Ave. Line, IRT Div., Atlantic Ave. to Wall St., Contr. S-100, Brooklyn and Manhattan Boros, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 23. CD 8/9.

▲ **Arthur A. Johnson Corp.**, 347 Madison Ave., New York, N. Y., and **Peter Kiewit Sons Co.**, 122 E. 42 St., New York 17, N. Y., CA $17,920,913 Combination Bid, Narrows Bridge Contr. NB-5B, Brooklyn Anchorage; Contr. NB-5B, Staten Island Anchorage, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randalls Island, New York 35, N. Y. Bids Aug. 31, awarded Sept. 22. CD 9/2, under LB.

BUILDINGS—LB & CA

▲ **County Development Corp.**, 1100 McCarter Highway, Newark, N. J., Owner Builds, $13,000,000, four 14 story, 760 units APARTMENTS and SHOPPING CENTER, PATERSON, N. J. Tito Di Vincenzo, 136 E. 57 St., New York, N. Y., and 440 E. State, Trenton, N. J., archt.

SOUTH

BUILDINGS—BA

▲ **Ky., Lexington**—CHEMISTRY AND PHYSICS BLDG.—BA 10/25—Commonwealth of Ky., Div. Purchases, Frankfort, 3 story, no bsmnt., 245,450 sq. ft. brick, rein.-con. chemistry-physics bldg. University of Kentucky. $5,400,000. Plans deposit $100. Brock & Johnson, 159 Barr St., archts. Staggs & Fisher, 508 E. Main St., mechanical engrs. CD 8/13/59.

BUILDINGS—LB & CA

▲ **Doyle & Russell**, 823 W. 21st St., Norfolk, Va., LB $2,119,000 (6 bidders), 5 story, 70 x 40 ft., steel frame, masonry, air conditioned HOSPITAL addns., alterations, PORTSMOUTH, VA. Portsmouth General Hospital, Inc., Leckie St., Portsmouth, Va. Bids Sept. 22. CD 9/22.

▲ **C. A. Filland Inc. & Paul Smith Const. Co.**, 315 Madison St., Tampa, Fla., CA Est. $4,000,000, 10 story BANK and OFFICE, TAMPA, FLA. Marina Bank & Trust Co., Franklin and Madison Sts., Tampa, Fla. Frank S. Valenti, 404 Marion St., Tampa, Fla., archt. J. C. Russello, 4603 Gr. Central Ave., Tampa, Fla., str. engr. Elliot Chapin Fletcher & R. James Robbins, 404 Marion St., Tampa, Fla., consult. engrs. CD 6/16.

▲ **Trammell Constr. Co.**, Johnson City Rd., Bristol, Tenn., LB $1,825,000, (12 bidders), Combination Bid, three 3 story, 37x98 ft., brick, steel joists men's DORMITORIES and 2 women's 40x122 ft. RESIDENCE BLDGS., and 128x150 ft. DINING HALL, DANVILLE, KY. Centre College of Kentucky, Danville, Ky. Bids Sept. 21. CD 9/22.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West
PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported n low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

BUILDINGS—LB & CA

▲ **Ind., Marion**—BA 10/20—City, City Hall, sewage work imprvs., Div. A, sewage treatment plant addn., Plans deposit $90; Div. B, west bank interceptor, Plans deposit $15; Div. C, south trunk interceptor, Plans deposit $20; Div. J, 38th street sanitary relief interceptor, Plans deposit $15; Div. K, south side sanitary relief sewers, Plans deposit $25; Div. M, Lomax Street pumping station and sewers, Plans deposit $20. Consoer, Townsend & Assoc., 360 East Grand Ave., Chicago 11, Ill., consult. engrs. CD 1/8/58.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ind., Marion**—BA 10/20—City, City Hall, sewage work imprvs., Div. A, sewage treatment plant addn., Plans deposit $90; Div. B, west bank interceptor, Plans deposit $15; Div. C, south trunk interceptor, Plans deposit $20; Div. J, 38th street sanitary relief interceptor, Plans deposit $15; Div. K, south side sanitary relief sewers, Plans deposit $25; Div. M, Lomax Street pumping station and sewers, Plans deposit $20. Consoer, Townsend & Assoc., 360 East Grand Ave., Chicago 11, Ill., consult. engrs. CD 1/8/58.

HEAVY CONSTRUCTION—LB & CA

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing 26, Bids opened 9/21,
Mich.—**Raff & Dexter**, 210 W. Greenlawn Ave., Lansing, Mich., LB $1,861,918, three structures to connect eastbound I-196 with southbound US 131, westbound I-196 with northbound US 131 and bridge carrying I-196 over West River Dr.; one dual bridge to carry I-196 over US 131 second to connect northbound US 131 with eastbound I-196 and third to carry US 131 over relocated drain near north limits of Grand Rapids, Kent Co.;
Mich.—**Thornton Constr. Co.**, Hancock, Mich., LB $1,987,186, freeway to connect with 19 mi. section at M-55, Roscommon Co.;
Mich.—**C. J. Rogers**, 14836 Grand River Rd., Detroit, Mich.; **Jutton-Kelly**, 13240 Alber St., Dearborn, Mich. and **Cooke Contg. Co.**, 1116 Pebobcot Bldg., Detroit, Mich., LB $3,325,415, reconstr. 2 mi. Southfield Rd. into freeway, incl. east and west service roads, utility alteration, power house, retaining walls, storm water pumphouse, vehicular bridge on section between Schoolcraft and McNichols Rd., Wayne Co.;
Mich.—**John Yerington**, RR 3, Box 34, N. Shore Dr., Benton Harbor, Mich., LB $116,200, reconstr. 0.3 mi. US 31 (Niles Ave.) St. Joseph, Berrien Co. CD 9/15.

▲† **Great Lakes Dredge & Dock Co.**, Williamson Bldg., Cleveland, O., LB $4,396,294, est. under $3,500,000, dredging Saginaw River from D & M R.R. Bridge to 24 ft. contour in Saginaw Bay, downstream from Bay City, CIVENG-20-064-61-5, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids Sept. 23. CD 9/22.

BUILDINGS—LB & CA

▲ **Raymond Homes**, 887 Renninger St., Akron, O., Own Forces, $4,125,000, Zelray Estates, 250 HOMES, Franklin Twp., AKRON, O.

MISSISSIPPI TO ROCKIES

BUILDINGS—BA

▲ **Tex., Amarillo**—HOTEL—Bids Asked—G. W. Maguire & Associates, 1008 Harrison St., (selected list of bidders), 289 room hotel, $2,538,000. John B. Allen & Wm. C. Schell, 6500 Washington St., archts. CD 6/10.

HEAVY CONSTRUCTION—LB & CA

▲† **Latta Bridge Co., Inc. & J. E. Latta Constr. Co., Inc.**, 6609 Latta Pl., St. Louis 33, Mo., CA $2,168,915, flood protection, Proj. Items L-1, F-1, S-2, P-1 and P-2, St. Louis, ENG-23-065-61-4, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Sept. 8. CD 9/13, under LB.

▲ **TEXAS** — State Hy. Comn., Austin, Bids opened Sept. 21,
Tex.—**Borsberry Constr. Co.**, Box 4257, El Paso, Tex., LB $1,107,938, grading, strs. and surf., 28.626 mi., Proj. R 957-9-1, Presidio and Brewster Counties;
Tex.—**Cage Bros.**, 6959 San Pedro, San Antonio, Tex., LB $2,863,888, grading, strs., 4.722 mi., Hy. IH 820, Proj. I 820-4(29), Tarrant Co.;
Tex.—**Dean Word Co.**, Box 330, New Braunfels, Tex., LB $1,084,489, grading, strs., fl. base and asp.

FOUNDATIONS
UNDERPINNING
PILING

Spencer White & Prentis INC.

SHORING
COFFERDAMS
"COLCRETE" PROCESS

CATALOGUE ON REQUEST

10 E. 40th ST., NEW YORK 16
DETROIT: 2033 PARK AVE.
CHICAGO: 221 NORTH LaSALLE ST.
WASHINGTON, D. C.: TOWER BLDG.

conc. pvt., 5.568 mi., Hy. U.S. 183, Proj. F 257(11), etc., Williamson and Travis Counties. CD 4/2.

▲† **W. & L. Constr. Co.**, Box 3987, Oklahoma City, Okla., CA $1,993,750, modernizing 125 dormitories, Lowry Air Force Base, Proj. No. 05-600-60-124, DENVER, COLO. Base Procurement Office, Dpt. Air Force, Bldg. 358, Denver, Colo., Bids July 8, awarded Sept. 7. CD 9/15.

BUILDINGS—LB & CA

▲† **George B. Emery, Jr., Charles Bennett, Cecil Hunter and T. C. Lundberg 3rd**, 2133 Potomac, Topeka, Kan., LB $13,247,000, est. $13,622,847 (5 bidders), 867 units (2) CAPEHART HOUSING, ENG-23-028-61-5, FORT RILEY, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Sept. 21. CD 9/12.

FAR WEST

BUILDINGS—BA

▲ **Calif., San Francisco**—DORMITORY, etc.—BA 10/27—San Francisco College for Women, Long Mountain, 4 story dormitory with recreation center and dining facilities. $2,500,000. Wilton Smith, 2143 Lombard St., San Francisco, Calif., archts. CD 8/13/59.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 Spring St., Los Angeles,

V. R. Dennis Constr. Co., P.O. Box 3158, Hillcrest Station, San Diego, Calif., CA $2,988,425, 5.4 mi. four lane freeway State Sign Rte. 78 between ½ mi. west of Rancho Santa Fe Rd. and east of Nordahl Rd. near Escondido, incl. 7 traffic separation bridges, San Diego Co. Bids Sept. 8, awarded Sept. 22. CD 9-15, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 9/22,

E. C. Young, 3256 F St., San Diego, Calif., and **Muns Constr. Co.**, P.O. Box 3697, San Diego, Calif., LB $3,117,296, (5 bidders), grading, paving 2.3 mi. U.S. Hy. 80 to convert present 4 lane expressway to 6 and 8 lane freeway between east of Lake Murray Blvd. and west of State Sign Rte. 67 incl. 5 traffic separation and ramp structures, San Diego Co. CD 8/25.

▲ **CALIFORNIA**—State Div. Hy., 1120 N St., Sacramento, Bids opened 9/21,

Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., LB $4,696,579, (5 bidders), grading, paving 3.8 mi. four lane freeway, Contra Costa approach to Benicia-Martinez Bridge, Contra Costa Co. CD 8/17.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

Piombo Constr. Co., P.O. Box 607, San Carlos, Calif., CA $2,635,394, grading, paving 2.6 mi. four lane freeway US 50 between Washington St., Placerville and railroad crossing East of City at Smith Flat Rd., incl. 5 structures, El Dorado Co. Bids Sept. 14, awarded Sept. 23. CD 9/16, under LB.

BUILDINGS—LB & CA

▲ **Continental Constr. Co.**, 4671 24 St., Sacramento, Calif., LB $2,251,000, (7 bidders), 2 floor, full bsmnt., 197,000 sq. ft. DEPARTMENT STORE in Arden Fair Shopping Center, near SACRAMENTO, CALIF. Hales Dpt. Store, 9 and K Sts., Sacramento, Calif. Charles Luckman Assocs., 9220 Sunset Blvd., Los Angeles, Calif., archts. CD 9/28/56.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ill., Aurora**—City, City Hall, voted bonds Aug. 13, 16 mi. mains, 1½ m.g. water tower, wells and pump station. $2,500,000.

SEWERS, WASTE DISPOSAL

▲ **Ill., Jerseyville**—City, City Hall, defeated $425,000 bonds Aug. 30, sewer and water system imprvs., extension, $2,500,000. Warren & Van Praag, Inc., 253 S. Park St., Decatur, consult. engr. CD 8/23.

▲ **O., Dayton**—Bd. Comrs. Montgomery Co., Courthouse Stillwater Sewers. $3,071,386. Ralph L. Woolpert Co., 360 W. 1st St., consult. engr. CD 7/12.

▲ **Tex., Amarillo**—City, City Hall, defeated bonds Sept. 12, sewer imprvs., extensions, $5,500,000. Freese, Nichols & Endress, 407 Danciger Bl., Fort Worth, consult. engrs. CD 7/27.

BRIDGES

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pennsylvania Ave. N.W., H St. viaduct, H St. between 1st and 2nd Sts. N.E., $2,000,000. Rummel, Klepper & Kahl, 1021 N. Calvert St., Baltimore, Md., engrs.

Three Sisters Bridge and Interchange over Potomac River, Potomac River Freeway, on D. C. side, Intermediate 66 on Virginia side, $10,400,000.

Pennsylvania R.R. grade separation at Main Ave. S.W., $426,000.

New York Ave. N.E. viaduct, W. Va. Ave. and Montana Ave., and Bladensburg Rd., $2,850,000.

STREETS AND ROADS

▲ **ALASKA**—State of Alaska, State Dpt., Juneau, $23,000,000 bond election Nov. 8, highways.

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pennsylvania Ave. N.W. (6 year program), expressway from the Potomac River near Three Sisters Islands around the District to Potomac River south of

(Continued on page 84)

Protect Openings with

Kinnear Rolling Grilles

They block any doorway with an attractive "open" appearance! And without blocking off air, light or vision. Like Kinnear Rolling Doors, the steel-bar-and-link grilles coil above the opening when not in use. No space wasted! Motor control if desired. Built to fit any door, window, or other opening. Write for free catalog!

The KINNEAR Manufacturing Co.

KINNEAR ROLLING DOORS
Saving Ways in Doorways

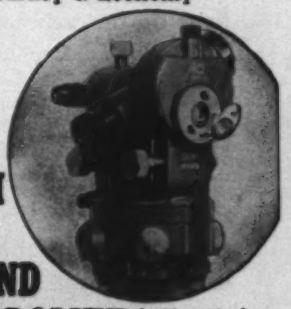
1820-40 Fields Avenue
Columbus 16, Ohio
1742 Yosemite Ave.
San Francisco 24, Calif.

*IN TEXAS ...AND THE WORLD OVER

KERN SURVEYING INSTRUMENTS

*The Bridge Division of the State of Texas Highway Dept. uses Kern Instruments

WORLD FAMOUS FOR
Working Speed
Operational Simplicity
Accuracy & Economy



DKMI TEN SECOND THEODOLITE *(with optical micrometer)*

- Exceptional portability and precision.
- Readings automatically ... AT A GLANCE.
- Direct reading to 10". Estimation to 1". Average working accuracy —3-4 secs.
- Can be used with electric lighting unit for night work.

KERN CENTERING TRIPOD

Unique—a Kern first! Centers instruments in seconds with remarkable accuracy. Assures exceptional stability with ball-and-socket head, supporting instrument coupling.

★

Write for Brochure DK 518-1

PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL

Kern SWISS

The FINEST in SURVEYING EQUIPMENT

KERN INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.

How to put a culvert to bed

(and keep it there)

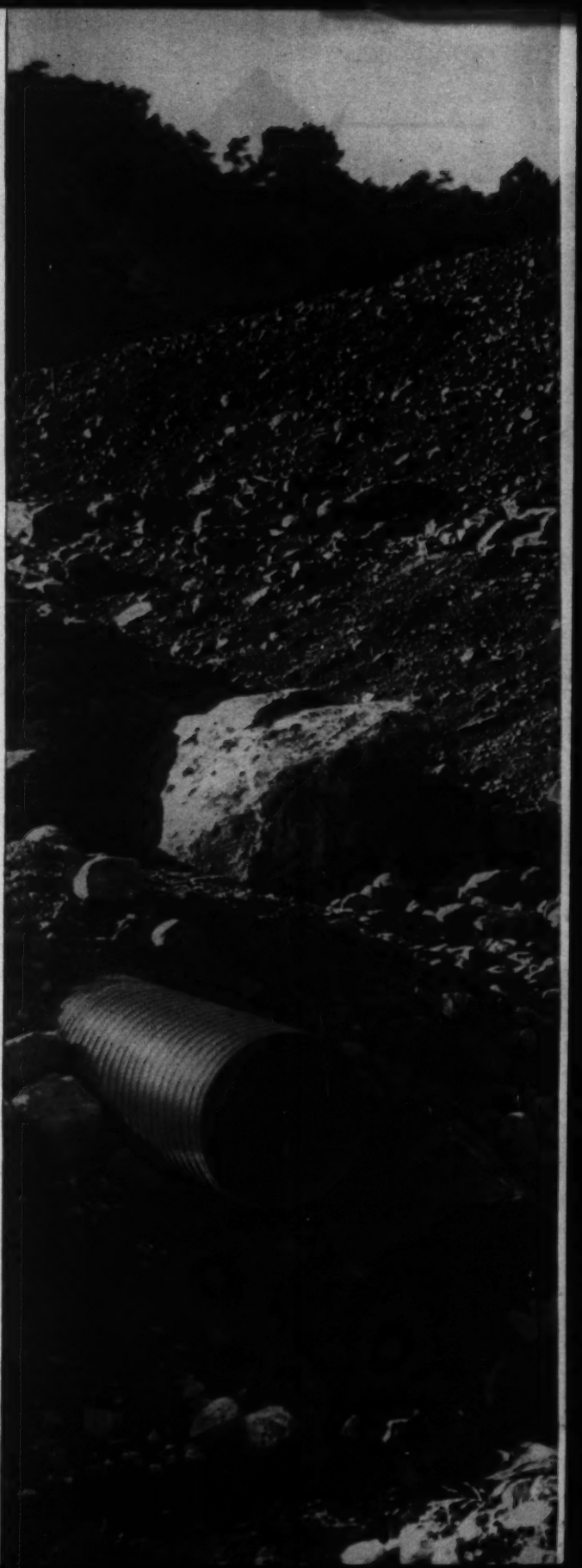
One of the best things about installing Corrugated Steel Drainage Structures is the fact that an elaborate foundation is not needed. If you're laying Corrugated Culverts for roadway drainage, usually all you have to do is to smooth the grade line and straighten the channel alignment. Forget about forms and curing time; Corrugated Steel Culverts can be rolled or lowered quickly into place, back-filled, and forgotten.

Here are a few things to remember: the load-supporting capacity of a Corrugated Steel Structure depends on its foundation and the manner in which it is bedded. The foundation should be free of projecting stones, roots and debris. Corrugated Steel Culverts need not be encased because this would hinder one of Corrugated Steel's big advantages—flexibility. Back-fill should be kept clean, too, and well tamped until it reaches a minimum of ¾ of the height of the pipe. Tamping above this height is not necessary.

Quick, economical installation is just one advantage of Corrugated Steel Drainage Structures. They cost less, are free from upkeep and repair, and they're built to *last*.

Send for U. S. Steel's free booklet on Culvert Sheets for Metal Drainage Products. It tells all about design, sizes and weights, installation and other valuable engineering details. Write today, to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

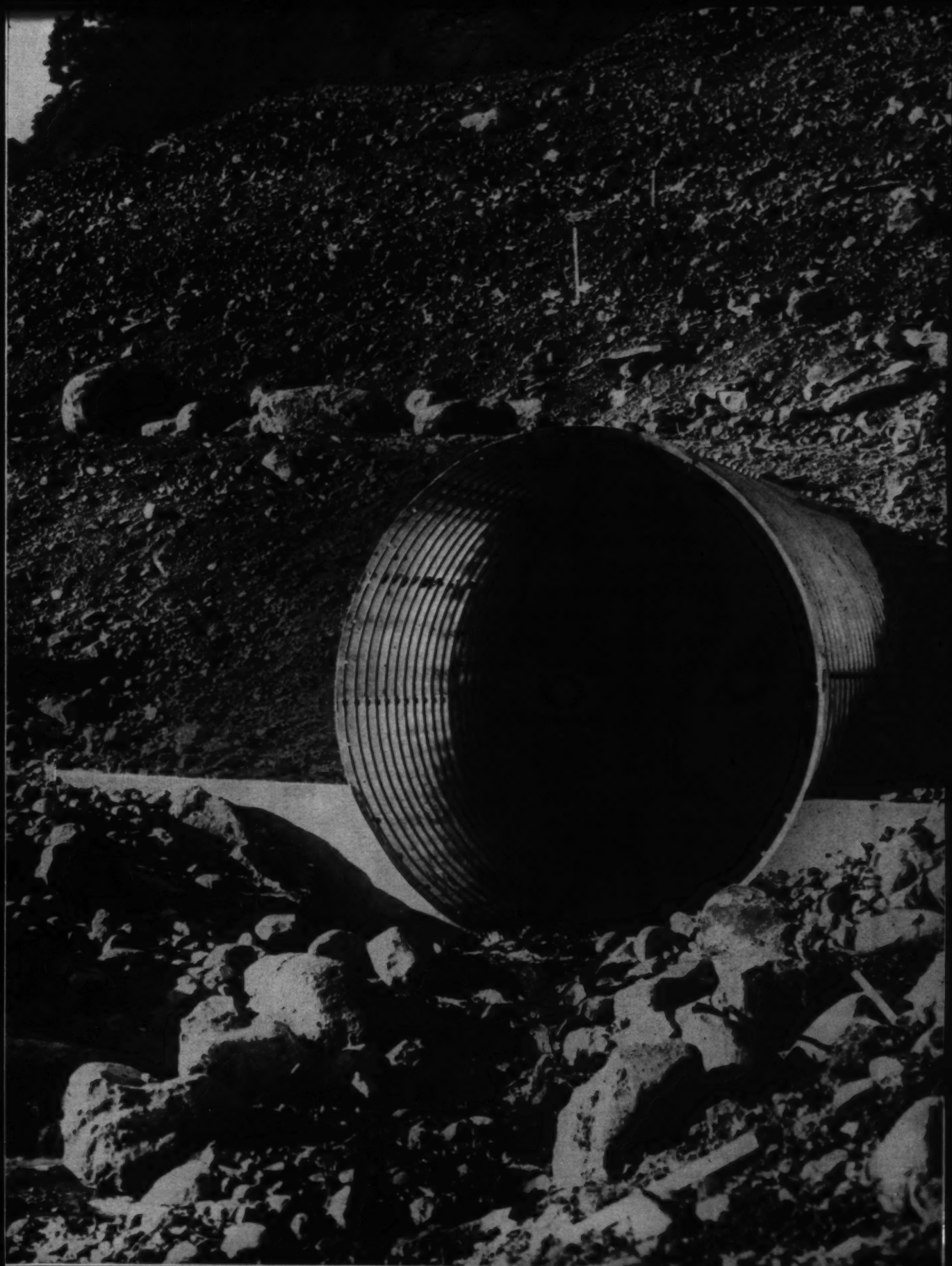
USS is a registered trademark



USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company
United States Steel

This mark tells you a product is made of modern, dependable Steel.



HORNFLEX

Sealant...

for all the wide open beauty of curtain wall design... *with none of the weather sealing problems*

Hornflex Sealant compresses, stretches and flexes with wall movement—yet keeps a solid weather seal at all temperatures. Bonds lastingly to aluminum, glass, steel, concrete and stone to form a watertight seam that stays put.

Hornflex Sealant also has many uses in swimming pool, highway and bridge construction. Write for 8-page catalog, Dept. ENR-144.

A.C. HORN COMPANIES
SUBSIDIARIES & DIVISIONS
Sun Chemical Corporation
750 THIRD AVE., NEW YORK 17, N.Y.

Plants in:
ATLANTA • CHICAGO • HOUSTON
DENVER • LOS ANGELES • SAN FRANCISCO • PORTLAND, ORE.
NORTH BERGEN, N. J. • TORONTO

Sales offices and warehouses throughout the United States and Canada.

(Continued from page 81)

Washington National Airport, $100,000,000, no appropriation.

Anacostia Freeway, Woodrow Wilson Bridge to East Capitol St., $29,290,000, no appropriation. Rummel, Klepper & Kahl, 1021 N. Calvert St., Baltimore, Md., engrs. Baker-Wibberley & Assocs., 12 W. Read St., Baltimore, Md., consult. engrs.

North Leg Inner Loop, 21st and Massachusetts Ave. to 11th St. and Florida Ave. N.W., $26,900,000, no appropriation.

North Leg Inner Loop, from 11th St. and Florida Ave., N.E. to Benning Rd. at 26th St., $8,760,000, no appropriation.

Interchange C, Inner Loop, 7th and Virginia Ave., S.E. to 13th and K Sts. S.E. and M St. S.E. and 11th St. to 11th and G Sts. S.E., $11,855,000, no appropriation. DeLeuw, Cathers & Co., 1308 18 St. N.W., consult. engrs.

East Leg Inner Loop, Interchange G St. S.E. to G St. (11th St.) N.E. "Interchange C" G St. S.E. to Independence Ave., $7,816,000, no appropriation. Morrow, Mendenhall & Miller, 1025 Connecticut Ave. N.W., consult. engrs.

South Leg Inner Loop, S.E. Freeway to 13th St., and Barney Circle, $2,025,000, no appropriation.

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pennsylvania Ave. N.W., Center Leg connecting Southwest Freeway to North Leg of Inner Loop, $46,646,000. Gannett, Fleming, Corddry & Carpenter, Inc., 700 N. Front, Harrisburg, Pa., consult. engrs.

Potomac River Freeway, G St. N.W. to Glover Archbold Parkway, $23,000,000. Palmer, Smith & Reese, 2461 Wisconsin Ave. N.W., engrs.

West Leg of Inner Loop, 27th and K Sts. N.W. to 21st and Massachusetts Ave. N.W., $27,000,000. CD 10/8/59.

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pennsylvania Ave. N.W.,
paving 4th St. N.E., Franklin St. to Michigan Ave., $94,000,000.
paving 16th St. N.W., M St. to U St. and Columbia Rd. to D. C. line, $1,316,000.
paving E St. N.W., Connection to Inner Loop, 19th-24th Sts. N.W., $5,200,000.
paving Massachusetts Ave., 7th St. N.E. to G St. N.W., $1,000,000.
paving New York Ave. N.E., 1st St. to W. Virginia Ave., $1,200,000.
paving Wisconsin Ave., M St. to D. C. line, $3,158,000.

EARTHWORK, WATERWAYS

▲† **Arkansas and Missouri**—U. S. Eng., P. O. Box 867, Little Rock, Ark., Bull Shoals Reservoir (Units 5 and 6) White River, $3,200,000. CD 9/29/59.

▲† **Arkansas**—U. S. Eng., P. O. Box 80, Vicksburg, Miss., Beaver Reservoir, White River Watershed, $2,800,000. CD 9/15/59.

▲† **Arkansas**—U. S. Eng., Bay Bldg., Little Rock, Greers Ferry Reservoir, Little Red River, $14,143,000. CD 9/29/59.

▲† **Arkansas**—U. S. Eng., Gay Bldg., Little Rock, Dardanelle Lock and Dam, Arkansas River, $6,100,000.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Los Angeles County Drainage Area Flood Control. $13,100,000. CD 9/30/59.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, dredging Port Hueneme Harbor. $2,422,000. CD 9/30/59.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, Terminus Reservoir, Kaweah River. $6,300,000. CD 10/1.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, Black Butte Reservoir, Stony Creek, Sacramento River. $5,900,000. CD 2/13/57.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, dredging Sacramento River Deep-water ship channel. $7,000,000. CD 10/1/59.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, Success Reservoir. $2,588,000. CD 10/1.

▲† **Florida**—U. S. Eng., P.O. Box 4970, Jacksonville, flood control, central and southern Florida. $11,500,000. CD 9/29/59.

▲† **Florida**—U. S. Eng., P.O. Box 4970, Jacksonville, intercoastal waterway, dredging Caloosahatchee River to Anclote River. $2,000,000.

▲† **Georgia and South Carolina**—U. S. Eng., 200 East St. Julian St., Savannah, Ga., Hartwell Reservoir, $21,375,000. CD 9/29/59.

▲† **Illinois**—U. S. Eng., 536 S. Clark St., Chicago, Zone 5, flood control, East St. Louis and vicinity, Mississippi River, $2,476,000. CD 9/29/59.

▲† **Illinois**—U. S. Eng., 420 Locust St., St. Louis 2, Mo., Carlyle Reservoir, Kaskaskia River, Upper Mississippi River Basin, $3,500,000. CD 9/29/59.

▲† **Illinois**—U. S. Eng., 420 Locust St., St. Louis 2, Mo., rectification of damages, Mississippi River between Missouri River and Minneapolis, Minn., $2,660,000. CD 9/26/58.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Tuttle Creek Reservoir, Big Blue River. $16,500,000. CD 9/29/59.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., John Redmond (Strawn) Reservoir, Grand River. $3,800,000. CD 9/5/57.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Pomona Reservoir, One Hundred Ten Mile Creek. $3,500,000.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Wilson Reservoir, Saline River. $2,000,000.

▲† **Kansas**—U. S. Eng., Box 61, Tulsa, Okla., Council Grove Reservoir, Grand (Neosho) River. $2,000,000.

▲† **Kentucky and Ohio**—U. S. Eng., 237 4 Ave., Huntington 18, W. Va., Captain Anthony Meldahl locks and dam (New Richmond). $15,000,000. CD 9/29/59.

▲† **Kentucky and Indiana**—U. S. Eng., 830 W. Broadway, Louisville, Ky., Markland locks and dam, Ohio River. $12,600,000. CD 12/27/55.

▲† **Kentucky and Ohio**—U. S. Eng., P. O. Box 2127, 237 Fourth Ave., Huntington, W. Va., Greenup locks and dam, Ohio River. $9,959,000. CD 9/29/59.

▲† **Kentucky and Indiana**—U. S. Eng., P. O. Box 59, Louisville, Ky., McAlpine locks and dam (Lock and Dam No. 41), Kentucky River. $9,215,000. CD 9/29/59.

▲† **Kentucky and Tennessee**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., Barkley Dam. $17,000,000. CD 10/1/59.

▲† **Kentucky**—U. S. Eng., P. O. Box 59, Louisville, Zone 1, No. 2 Barren Reservoir. $2,175,000.

▲† **Kentucky**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., Nolin Reservoir. $2,600,000. CD 4/17/59.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Gulf Intracoastal Waterway: (b) Plaquemine-Morgan City alt. route. $4,166,000.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Mississippi River, Baton Rouge to the Gulf of Mexico. $2,000,000.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Mississippi River, gulf outlet. $8,750,000.

▲† **Maryland**—U. S. Eng., P.O. Box 1715, Baltimore, Zone 3, dredging to 42 ft. Baltimore Harbor and Channel. $2,000,000. CD 9/26/58.

▲† **Massachusetts**—U. S. Eng., 150 Causeway St., Boston, Westville Reservoir, Thames River. $2,660,000.

▲† **Michigan**—U. S. Eng., P. O. Box 1027, Detroit 31, Mich., imprv Great Lakes connecting channels. $30,000,000. CD 9/29/59.

▲† **Minnesota**—U. S. Eng., U. S. Post Office & Custom House, 180 E. Kellogg Blvd., St. Paul, Zone 1, dredging St. Anthony Falls, Mississippi River. $4,900,000.

▲† **Missouri**—U. S. Eng., 911 Walnut St., Kansas City, 6, Mo., Pomme de Terre Reservoir, Missouri River. $3,600,000. CD 9/29.

▲† **Missouri**—U. S. Eng., 420 Locust St., St. Louis, Zone 2, flood control, St. Louis. $6,250,000. CD 9/29/59.

▲† **New Hampshire**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Hopkinton-Everett Reservoirs, contoocook and Piscataquog Rivers flood control. $8,370,000.

▲† **New Mexico**—U. S. Eng., P.O. Box 1538, Albuquerque, Abiquiu Reservoir, Rio Chama near Espanola. $4,600,000. CD 9/28/59.

▲† **Pennsylvania**—U. S. Eng., 925 Federal Bldg., Pittsburgh, Zone 19, Allegheny River Reservoir, $4,530,000. CD 9/15/59.

▲† **Pennsylvania**—U. S. Eng., 24th St. and Maryland Ave., Baltimore 18, Md., Kettle Creek Reservoir, West Branch, Susquehanna River, $2,200,000.

▲† **Pennsylvania and Ohio**—U. S. Eng., New Federal Bldg., Pittsburgh, Zone 19, Shenango River Reservoir, $2,200,000.

▲† **Texas**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., rehabilitation irrigation facilities, Lower Rio Grande Proj., Mercedes Division, $2,509,000.

▲† **Texas**—U. S. Eng., 100 W. Vickery St., Fort Worth, Navarro Mills Reservoir, Richland Creek, $3,100,000. CD 9/28/59.

▲† **Texas**—U. S. Eng., P. O. Box 1600, Fort Worth, Canyon Reservoir, Guadalupe River, $2,900,000.

▲† **Texas**—U. S. Eng., 100 W. Vickery St., Fort Worth, McGee Bend Dam, Angelina River, $6,000,000. CD 9/28/59.

▲† **Texas**—U. S. Eng., P. O. Box 1129, Galveston, Buffalo Bayou and Tributaries, San Jacinto River, $2,500,000. CD 9/30/59.

AIRPORTS

▲† **Mass., Falmouth**—BOMARC MISSILE FACILITIES—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Bomarc Missile Facilities, Otis Air Force Base. $3,000,000 funds released.

▲† **Tex., Sherman**—PAVING, LIGHTING, etc.—U. S. Eng., 100 W. Vickery Bldg., Fort Worth, paving, lighting, flight training, ground control interceptor, art craft maintenance, parachute and dinghy shop, maintenance power outlet, Perrin Air Force Base, $3,260,000 funds released. CD 8/21/56.

▲ **Wash., Whidbey Island**—RUNWAY—Public Works Officer, 13th Naval Dist., Naval Station, Seattle, 8,000 ft. runway, Naval Air Station, Oak Harbor, $7,000,000. Bids in November. CD 9/16/57.

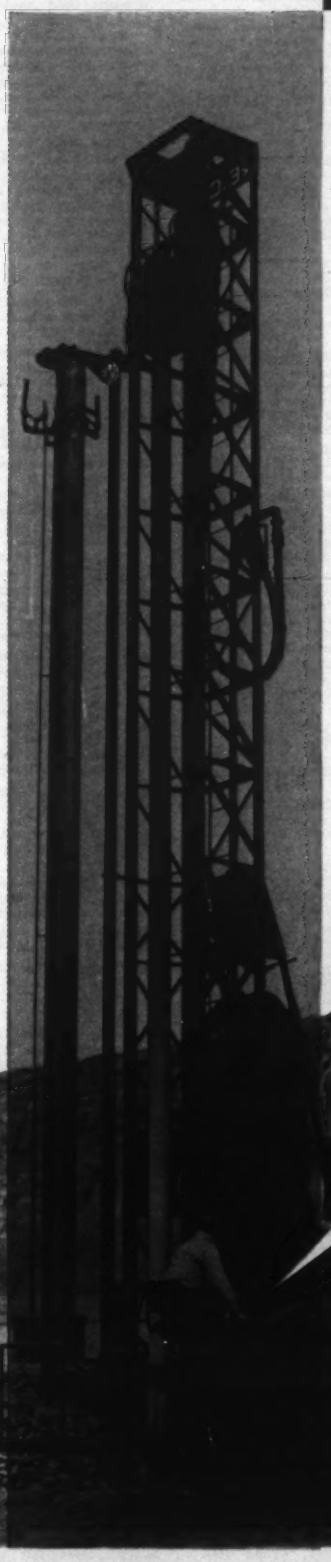
UNCLASSIFIED

▲ **Calif., Fontana**—AMUSEMENT PARK—Colossus, Inc., c/o Sandy Howard Productions, 8782 W. Sunset Blvd., Los Angeles, Land of Colossus Amusement Park, Foothill Blvd. $3,000,000.

▲ **Ky., Louisville**—SWIMMING POOLS—City, City Hall, 6th and Jefferson St., Zone 11, plans by McCulloch

(Continued on page 86)

THERE'S NO EASIER DRILL TO RUN THAN A REICHdrill!



T-750 truck-mounted REICHdrill. Hole size to 12"; down pressure 45,000 lbs. Other models available, truck or crawler mounted, with hole size to 16 inches, down pressure to 90,000 pounds

This smooth operating, all-hydraulic rotary rig is helping REICHdrillers set higher footage records.

In blast holing, prospecting and coring, there's no easier drill to run than a REICHdrill. And the key to money making drilling records is a simplified *control "console"*. From it, every move required by the driller . . . every decision he makes...is converted smoothly, instantly, by the all-hydraulic system, into positive, time-saving performance.

Hydraulic drive to drill stem eliminates power loss . . . transmission troubles . . . kelly and rotary table.

Vari-speed Hydraulic Drill Control gives the operator the right combination of rotary speed and feed pressure for every formation...leveling jacks, mast raising cylinder and barrel loader are hydraulic too!

Other features: fast, easy set-ups; masts incline for angle drilling; CP heavy-duty compressors; CP Air-Blast Bits for extra footage in toughest formations. *You get more from your rotary when it's a* REICH*drill!*

For further information write:

REICHdrill

FRANKLIN (VENANGO COUNTY), PENN.

Division: CHICAGO PNEUMATIC TOOL CO.

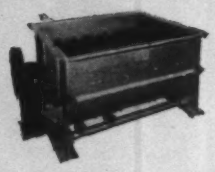
Positioned at control "console", REICHdriller has every rig maneuver in sight . . . every rig control in reach.

HARBERT

BUILDING FOR . . .
A GROWING AMERICA

HARBERT CONSTRUCTION CORPORATION
BIRMINGHAM, ALABAMA

POSEY WORKS FOR BETTER-
PUG MILLS



Twin shaft pug mill mixers with new blade arrangement give faster, more uniform mixes. For complete Asphalt plants, dryers, or equipment, call Posey.

For 22-page illustrated catalog on Asphalt plants and equipment, write:

POSEY IRON WORKS INC.

Custom Fabrication For Over 50 Years

DIVISIONS:
• Iroquois Asphalt Plants • Mixers and Blenders
• Tunnel Forms • Industrial Heating • Foundry
• Large OD Steel pipe

561 S. PRINCE STREET LANCASTER, PA.

(Continued from page 84)

& Bickel, archts.-engrs., 1445-54th St., 4 junior swimming pools, 16th and St. Catherine, 9th and Magazine Sts., 18th and Wilson, 13th and Hill Sts. $3,500,000. CD 10/10/50.

▲ **N. Y., Buffalo**—CLASSIFICATION CENTER—Erie-Lackawanna R. R., Midland Bldg., Cleveland 15, O., electronically controlled classification center for freight in East Buffalo; 49 classification tracks plus 10 receiving tracks, 5 story retarder bldg. and other facilities. $5,000,000.

▲ **N. Y., New York**—MARINA, etc.—Hudson Harbor, Inc., 295 Fifth Ave., marina, swimming pool, heliport and seaplane facilities, Hudson River at Dyckman St. $3,570,000. CD 6/28, under Department Marine & Aviation as owner.

▲ **N. C., High Point** — ELECTRIC DISTRIBUTION LINES—City, City Hall, electrical distr. lines for newly-annexed area, $2,200,000. L. E. Wooten & Co., P. O. Box 2984, Raleigh, engrs.

▲ **Pa., Phila.**—MAUSOLEUM—Roosevelt Memorial Park, Inc., Roosevelt Blvd. and City Line, plans by Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit, Mich., Gan Shalom Mausoleum. $5,000,000.

▲ **Tex., Arlington**—Grand Prairie—AMUSEMENT PARK—Great Southwest Corp., 220 Wynnewood Proj. Bldg., Dallas, plans by Marco Engineering Co., 1275 N. Swetzer, Los Angeles, Calif., amusement park between above cities. $10,000,000. Powell & Powell, Fidelity Union Life Bld., Dallas, consult. engrs. CD 12/10/57.

PUBLIC BUILDINGS

▲ **Ala., Auburn**—SCIENCE—Auburn University, Auburn, plans by Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, and Pearson, Tittle & Narrows, First National Bank Bldg., Montgomery, science bldg. $3,250,000. Morton & McElhaney, 239 Dexter Ave., Montgomery, consult. engrs. CD 8/4.

▲ **Alaska, Anchorage**—STATE OFFICE—State of Alaska, State Dpt., Juneau, $3,000,000 bond election Nov. 8, state office.

▲ **Alaska, College**—GYMNASIUM—State of Alaska, State Dpt., Juneau, $2,000,000 bond election Nov. 8, gymnasium, University of Alaska. CD 3/31.

▲ **Alaska, Fairbanks**—STATE OFFICE—State of Alaska, State Spt. Dpt., Juneau, $3,000,000 bond election Nov. 8, state office.

▲ **Ark., Osceola**—PLANT—City, City Hall, and Osceola Development Corp., Osceola, Ark., plans by Osborn Eng. Co., 7016 Euclid, Cleveland, O., mfg. plant. $3,000,000. American Greeting Card Co., 1300 W. 78th St., Cleveland 2, O., lessee. CD 9/19.

▲ **Fla., Fort Lauderdale**—SCHOOL—Broward Co. Bd. Public Instruction, 1320 S. W. 4th St., plans by William G. Crawford, 2114 N. E. 21st St., 132,000 sq. ft. Senior High School, $2,000,000. Gustav Mayer, 5860 N. E. 2nd Ave., Miami, consult. engr.

▲ **Ill., Northfield**—HIGH SCHOOL—Northfield Twp. High School Dist. 225, bond election Oct. 22, high school, north of Lake Ave. between Pfingsten and Lawndale Rds. $3,850,000.

▲ **Mass., Foxboro**—HIGH SCHOOL—Town, Supt. Schools, plans by Korslund, Le Normand & Quann, Inc., 506 Washington St., Norwood, high school. $2,000,000. CD 8/9.

▲ **Neb., Omaha**—HOSPITAL.—Douglas County, Courthouse, bond election Nov. 8, 100-bed hospital addn., altering Clearview Home. $2,500,000.

▲ **N. J., Roselle Park**—HIGH SCHOOL—Bd. Educ., Borough Roselle Park, plans by Emil Schnudlin, 50 Evergreen P., East Orange, high school. $2,000,000. CD 11/15/55.

▲ **N. J., Trenton**—STATE DEPARTMENT EDUCATION—State Dpt. Educ., State House, plans by Kramer Hirsch Carchidi, 115 W. State St., 5 story, 95,000 sq. ft. 66x218 ft. State Department Education Bldg., W. State St. $2,500,000. To start 1961. CD 3/23/55.

▲ **N. Y., Brooklyn**—BERNARD HABER HOUSES—New York City Housing Auth., 299 Broadway, New York 7, Proj. NYS-109 Bernard Haber Houses, 2 eight story and one 14 story bldgs., Surf Ave., W. 24 St., Riegelman Boardwalk, W. 25 St. $4,692,000. Joseph R. Loring Assoc., 25 W. 45 St., New York, Zone 36, mechanical engrs. James Ruderman, 32 Union Sq., New York, Zone 3, structural engrs. CD 9/13.

▲ **N. Y., Lackawanna**—HOUSING—Lackawanna Municipal Housing Auth., plans by Stanley C. Podd, 361 Delaware Ave., Buffalo., housing, $2,250,000. CD 5/6.

▲† **N. Y., Rome**—ELECTRICAL LABORATORY, etc.—U. S. Eng., 111 E. 16th St., New York, Zone 3, electrical laboratory, research, development and test facilities, Stockbridge Test Annex. $2,653,000. (Correction—owner). CD 8/18, under Navy Dpt. as owner.

▲ **Pa., Phila.**—SOCIAL SCIENCE CENTER, etc.—University of Pennsylvania, Phase 2, Social Science Center, 37th and Walnut Sts., $4,000,000; Phase 2, Veterinary Research and Instruction Bldg., $1,700,000. CD 10/14/46.

▲ **Pa., Zelienople**—SCHOOL—Southwest Butler County Jt. School Dist., CB Elementary School, plans Secondary School, Proj. 762. $2,500,000.

▲ **Wash., Richland**—SCHOOL—School Dist. 400, 615 Snow St., voted bonds Sept. 13, high school, $3,000,000. Cowan & Paddock, Larson Bldg., Yakima, archts.

▲ **Wash., Tacoma**—SCHOOL—Clover Park School Dist., No. 400, 5214 Steilacoom Blvd., voted $1,300,000 bonds Sept. 13, high school, $2,750,000. D. F. Burr & Associates, Lakewood Center, archts. CD 8/5.

▲ **Wis., Chippewa Falls**—INFIRMARY—State Dpt. Public Welfare, Madison, plans by Paul Hallbeck & Anderson, Inc., 102 E. Grand Ave., Eau Claire, infirmary, $3,000,000-$4,000,000. CD 7/19/54.

COMMERCIAL BUILDINGS

▲ **Alaska, Juneau**—HOUSES—Hieberg Contg. Co., 200 houses, West Juneau. $4,800,000.

▲ **Calif., LaSelva Beach (Br. Watsonville)** — APARTMENT—George A. Place & Bel-View Builders, Inc., c/o William R. Hawley, archt., 800 Welch Rd., Palo Alto, 3 story apartment. $2,000,000.

▲ **Conn., Greenwich**—APARTMENT—R. & H. Development Co., Mulberry Lane, Cos Cob, plans by Frost & Pierson, 248 Greenwich Ave., 4 story apartment, Steamboat Rd., $2,350,000.

▲ **Conn., Norwalk** — HOUSES — Pam-Bar Builders, 110 Westfield Ave., Bridgeport, 64 houses, $2,880,000.

▲ **Ga., Augusta**—RESIDENCES—Barrett & Trotter Realty Co., Masonic Bldg., plans by Lyman Robertson, 633 Telfair St., 191 residences, Kingston subdivision, incl. water and sewer lines. $2,000,000.

▲ **N. Y., Amherst**—SHOPPING PLAZA—Forest City Enterprises, 17903 St. Clair, Cleveland, O., plans by Lathrop Douglas, 518 5 Ave., New York, N. Y., shopping plaza. $10,000,000.

▲ **N. Y., Harrison**—CURE' D'ARS SEMINARY—Catholic Archdiocese Bldg. Comn., 451 Madison Ave., New York, Zone 22, Cure' D'Ars Seminary. $5,000,000.

▲ **N. Y., Lewiston**—HOSPITAL—Sisters of St. Francis, Williamsville, plans by Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd., Syracuse, hospital. $5,000,000. Constr. 1962.

▲ **N. Y., Valley Stream**—HOSPITAL—SEPA, c/o Gloster & Gloster, archts., 222 Sunrise Highway, Rockville Center, hospital, $2,000,000.

▲ **O., Akron** — SHOPPING CENTER — Fairlawn Plaza Shopping Center, c/o George Nobil, Everett Bldg., shopping center addn., W. Market St. $5,000,000.

▲ **O., Cincinnati** — RESIDENT HOME — Sisters of St. Joseph, 425 E. 5th St., plans by Bodman & Murrell & Smith, Nicholson Dr., Baton Rouge, La., 8 story, bsmnt., brick Fontbonne women resident home, northeast corner 5th St. and Broadway. $3,000,000.

▲ **O., Copley**—DEPARTMENT STORE—Fairlawn Building & Realty Co., 2940 W. Market St., Akron, Fairlawn Plaza, 2 story, 250,000 sq. ft. department store, 1,000 car parking addn. $5,000,000-$6,000,000.

▲ **Tex., Dallas**—BANK-OFFICE—First National Bank, 1401 Main St., multi-story, bank-office, $7,500,000.

▲ **Tex., Dallas**—OFFICE—Southwestern Life Insurance Co., SW Life Bld., home office, $4,000,000.

▲ **Tex., Fort Worth**—MATERNITY HOSPITAL—Harris Hospital, c/o 1300 W. Cannon St., plans by Preston M. Geren, 1607 Fort Worth National Bldg., 4 story, 144 bed maternity hospital. $6,000,000. CD 7/25/58.

▲ **Utah, Logan**—DORMITORIES—Church of Jesus Christ of Latter Day Saints, 47 E. South Temple, Salt Lake City, Zone 1, plans by Sterling R. Lyon, archt.-engr., Kiesel Bldg., Ogden, 7 men and women dormitories and double wing fraternity house. $2,000,000. CD 4/29.

▲ **Ont., Kitchener**—SHOPPING CENTER—Tankoos Yarmon Ltd., 320 Bay St., Toronto, shopping center, Weber and Bridgport Sts., $2,000,000.

INDUSTRIAL BUILDINGS

▲ **La., Baton Rouge** — PILOT PLANT — United States Rubber Co., Elm St., Naugatuck, Conn., pilot plant for trial production of new class of synthetic rubber. $2,000,000.

▲ **N. J., Montvale**—INDUSTRIAL PARK—Glenwal Co., Rte. 46, Saddle Brook, industrial park, 200 acres, Grand Ave. $10,000,000 (5 year program). $3,000,000 for 1960.

▲ **Tenn., Kingsport** — PLANT — Kingsport Press, Inc., plant expansion. $2,000,000. Walter F. Smith, c/o owner, engr.

▲ **Tex., Beaumont**—PLANT and SHOP—Mobil Chemical Co., Beaumont, benzine plant and shop. $6,250,000.

▲ **Tex., El Paso**—MILLS—Ramsey Steel Co., Edward J. Winter, 60 x 800 border steel rolling mills melt shop, $2,000,000; mill, $2,100,000; fabricating plant, $1,600,000, near here.

AMERICANS ABROAD

▲ **Spain, Miers**—POWER PLANT—Termicas Asturianas, Mieres, power plant. $8,500,000. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., U. S. A., consult. engrs. CD 3/18, under CA.

FOREIGN

▲ **Austrlia, Adelaide** — OFFICE — National Mutual Life Assoc., 91 King St., 12 story office. $2,250,000.

▲ **Israel, Ashdod**—Govt. of Israel, Tel Aviv, sheltered deep-water port, Mediterranean sea, 2 mi. breakwaters, dredging, piers, track and roadway, port utilities, etc. $54,700,000.

Philippine Islands, Manila—PLANT—Orval Chemical Co., 503 Choy Bldg., Basmarinas St., Manila, dynamite manufacturing plant. $2,000,000. DuPont Co., Wilmington, Del., U.S.A., will manage.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 12 Maine

October 10 Connecticut — October 12 Maine

October 13 Rhode Island

▲† **Conn., New London**—LABORATORY—BA 10/13—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, N. Y., 3 story, penthouse, H-type, 197 x 417 ft. anti-submarine research bldg., underwater sound laboratory, Fort Trumbull, $3,000,000. Plans deposit $130. Douglas Orr, 11 Whitney Ave., New Haven, archt. Hubbard, Lawless & Blakeley, 110 Whitney Ave., New Haven, Conn., engrs.

BUILDINGS—LB & CA

▲ **H. P. Cummings Constr. Co.**, High St., Woodsville, N. H., CA $1,328,333, JUNIOR-SENIOR HIGH SCHOOL, SOUTH BURLINGTON, VT. Town, 1000 Williston Rd., South Burlington, Vt. Bids Sept. 13. CD 9/16, under LB.

▲ **Middlesex Homes, Inc.**, 1 Russell St., Woburn, Mass., Owner Builds, Approx. $1,800,000, (Section 3B), 100 HOUSES, Woodvale, Rte. 62, DANVERS, MASS.

▲ **Faulk Bros., Inc.**, 35 Whittemore St., Gloucester, Mass., CA Approx. $1,500,000, FREEZING PLANT, off 15 E Main St., EAST GLOUCESTER, MASS. Quincy Market Cold Storage & Warehouse Co., 178 Atlantic Ave., Boston, Mass. CD 8/22.

▲ **Fontaine Brothers, Inc.**, 40 Hendrick St., Chicopee Falls, Mass., CA $1,534,000, Proj. Mass. 34-1, HOUSING, NORTH ADAMS, MASS. City Housing Auth., 340 Catherine St., North Adams, Mass. Bids Aug. 4. CD 8/8, under LB.

▲ **Fusco-Amatruda Co.**, 59 Amity Rd., New Haven, Conn., LB $6,176,000, (5 bidders), HIGH SCHOOL, HARTFORD, CONN. Bd. Educ., 249 High St., Hartford, Conn. CD 9/13.

▲ **F. H. McGraw & Co.**, 780 Windsor St., Hartford, Conn., CA $6,500,000, OFFICE BUILDING, HARTFORD, CONN. Connecticut Bank & Trust Co., 560 Main St., Hartford, Conn. CD 12/24.

▲ **George A. Fuller Co.**, 75 West 49th St., New York, N. Y., CA $5,500,000, Yale RARE BOOK and MANUSCRIPT LIBRARY, NEW HAVEN, CONN. Yale University, 105 Wall St., New Haven, Conn. CD 7/7.

▲ **Pam-Bar Builders**, 110 Westfield Ave., Bridgeport, Conn., Owner Builds, $2,880,000, 64 HOUSES, NORWALK, CONN. CD 9/22.

▲ **J. S. Nasin Co.**, N. Windham Rd., Willimantic, Conn., CA $1,465,000, JUNIOR HIGH SCHOOL, Ox Hill Rd., NORWICH, CONN. Town, Bd. Educ., City Hall, Norwich, Conn. Bids Sept. 8, awarded Sept. 22. CD 9/13.

▲ **David Williams, Inc.**, 144 Meadowmere Rd., Stratford, Conn., Owner Builds, $1,400,000, 70 HOUSES, Wilbar Park, Huntington Rd., Putney, STRATFORD, CONN. CD 9/9.

▲ **Carol Constr. Co.**, 80 East State St., Westport, Conn., $2,400,000, Owner Builds, 60 HOUSES, Roosevelt Rd., 50 HOUSES, Rivergate Park, Wilton Rd., $1,750,000, WESTPORT, CONN. CD 9/22.

▲ **Anderson-Fairoaks, Inc.**, 227 Newfield Ave., Hartford, Conn., CA $2,770,000, Proj. BI-2893, 3 story State Labor Dpt. OFFICE BLDG., Jordan Lane, WETHERSFIELD, CONN. State P. Wks. Comr., 165 Capitol Ave., Hartford, Conn. CD 9/13.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 27 New Jersey

October 11 Maryland, New Jersey

October 13, 20 New Jersey

▲ **N. Y., South Ozone Park**—BA 10/26—Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York, Zone 7, Contr. 3, structures and equipment; Contr. 4, electrical work, Contr. 5, plumbing work, Contr. 6, heating and ventilating for Jamaica Pollution Control Proj. extension, Queens Boro. Plans deposit $100. CD 7/28/59.

BUILDINGS—BA

▲ **N. Y., Niagara Falls**—SCIENCE—BA 10/19—Niagara University, Lewiston Rd., 2 story, steel frame, concrete science bldg. $1,500,000. Pfohl, Stoll & Roberts, 185 Niagara St., Buffalo, and Urban, Brayton & Burrows, 635 Madison Ave., New York, archts. DiStasio & Van Buren, 136 Liberty St., New York, Zone 6, structural engrs. Beman & Standeven, 154 W. Huron St., Buffalo, mechanical engrs. Walter H. Sherry & Assocs., 1160 Main St., Buffalo, electrical engrs. CD 7/6, under LB.

▲ **N. Y., Smithtown**—SCHOOLS—BA 10/20—Bd. Educ. Central School Dist. 1, 21 Oak Ave., Dogwood Eleentary School and Mount Pleasant Elementary School, $1,500,000 (separate and/or combination) Extended date. Garfinkel & Marenberg, 100 W. 42 St., New York, Zone 36, structural engrs. Segner & Dalton, 55 Church St., White Plains, mechanical engrs. CD 9/9.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 9/21,

Peter Kiewit Sons Co., 3604 New Court St., Syracuse 6, N. Y., LB $7,533,878 (12 bidders), 7.89 mi. 10.39 acc. mi. Interstate Rte. 502, Malta to Saratoga Springs, Int. Tr. Rte. 87, FISH. 60-8, Saratoga Co. CD 8/19.

▲ **Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., CA $1,892,942, Contr. 1002-2P-39 Div. G-4, structures and equipment sludge thickening facilities, garage, storage bldg., effluent pumping station, etc., sewage treatment works extension, sewage disposal, Dist. No. 2, Bay Park, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Franklin Ave., Mineola, N. Y. Bids Sept. 13, awarded Sept. 21. CD 9/16, under LB.

▲ **Hendrickson Bros., Inc.**, 63 No. Central Ave., Valley Stream, N. Y., LB $1,684,733, (3 bidders), Contr. 1002-2-RU-2, 19 mi. lateral sewers, 8 mi. house connections, Sewage Collection Dist. 2-RU, Roosevelt and Uniondale, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Franklin Ave., Mineola, N. Y. Bids Sept. 27. CD 9/6.

▲ **Woodcrest Constr. Co., Inc.**, 369 Lexington Ave., New York, N. Y., CA $1,201,349, Contr. C-140, subway platform extensions on Lexington-4th Ave. Line, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 2. CD 9/7, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

Poirier & McLane Corp., 33 West 42 St., New York, N. Y., CA $4,274,295, grading, paving and bridges 3.536 mi. Interstate Rte. 287, Section 2C from east of River Rd. Interchange to Steiton Rd., South Plainfield Boro and Piscataway Twp., Middlesex Co. Bids Sept. 8, awarded Sept. 24. CD 9/13, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J., CA $6,771,786, sand drains and incid. work for right of way 1.145 mi. Rte. 95, Section 1A from Teaneck Creek to Northern R. R., Proj. NJ. I-95-7(3) 63, Bergan Co. Bids Aug. 31, awarded Sept. 24. CD 9/2, under LB.

▲ **Vanguard Constr. Co.**, 369 Lexington Ave., New York, N. Y., CA $1,598,203 general contract 25 m.g.d. to 50 m.g.d. water filtration plant addn., TRENTON, N. J. City, Dpt. P. Wks., City Hall, Trenton, N. J. Bids Sept. 15, awarded Sept. 26. CD 9/21, under LB.

BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., LB $1,593,000, (5 bidders), general contract PUBLIC SCHOOL 257 Varet and Humboldt Sts., Brooklyn Boro, BROOKLYN, N. Y. Supt. Design, Constr. and Physical Plant, Bureau Constr. 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 27. CD/12.

▲ **Holler Bros.**, Roosevelt Ave., Tonawanda, N. Y., LB $1,998,129, est. $2,970,000, (13 bidders), general contract HIGH SCHOOL, NORTH TONAWANDA, N. Y. Bd. Educ., 236 Goundry St., North Tonawanda, N. Y. Bids Sept. 22. CD 8/23.

▲ **Fred Brotherton, Inc.**, 185 Atlantic St., Hackensack, N. J., CA $1,278,400 general contract second HIGH SCHOOL, OLD TAPPAN, N. J. Northern Valley Regional High School Dist., Demarest, N. J. CD 9/8, under LB.

▲ **Somers Constr. Co., Inc.**, Union Ave. and Cynwyd Rd., Bala-Cynwyd, Pa., LB $1,379,900, (15 bidders), general contract HIGH SCHOOL, Hamburg Area Jt. School Board, Proj. 670-668, HAMBURG, PA. Pa. Public Sch. Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. E. H. Adams & Associates, 37th St. and Perkiomen Ave., Reading, Pa., archts. Bids Sept. 22. CD 8/25.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md., CA $5,000,000, DEPARTMENT STORE, BALTIMORE, MD. Food Fair Properties, Inc., 355 Lexington Ave., New York, N. Y. Lathrop Douglas, 518 5 Ave., New York, N. Y., archt. Throop & Feiden, 207 E. 37 St., New York, N. Y., engrs. Montgomery Ward & Co., lessee. CD 8/4/59.

▲ **Fenix & Scisson, Inc.**, c/o owner, CA Est. $1,300,000, PROPANE PLANT, Gunpowder Falls and Harford Rd., BALTIMORE, MD. Baltimore Gas & Electric Co., Lexington Bldg., Baltimore 3, Md. CD 1/8/58, under Unclassified.

▲ **Saul Ritzenberg Assn.**, 1028 Connecticut Ave. N. W., Wash., D. C., Owner Builds, $5,000,000, 500 unit garden-type Marlow Overlook APARTMENT, St. Barnabas Rd., Marlow Heights near here SUITLAND, MD. Collines & Krondstadt & Assocs., 7705 Georgia Ave. N. W., Wash., D. C., archts. CD 7/20.

▲ **Brandywine Raceway Assocs.**, Concord Pike, Willington, Del., rejected bids, CLUB HOUSE, TALLEYVILLE, DEL., LB $2,029,000, Will re-advertise. CD 8/26 under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 11 West Virginia — October 14 Kentucky

October 14 Tennessee — October 18 South Carolina

November 4 Kentucky & Ohio

STREETS AND ROADS

October 11 West Virginia — October 14 Kentucky

October 14 Tennessee — October 18 South Carolina

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. Comn., Capitol Bldg., Raleigh, Bids opened 9/27,

N. C.—**Blythe Bros. Co.**, 2911 Hutchinson Ave., Charlotte, N. C., LB $2,643,761, fine grading, CABC and 9 in. concrete pavement 13.875 mi. surf. Interstate Rte. 40 between Old Fort and US Rte. 221 south of Marion, Proj. 8.18527, I 40-2(27)72, McDowell Co.;

N. C.—**Asheville Contg. Co.**, London Rd., Biltmore, N. C., LB $278,931, grading, CABC, bit. conc. binder, surf. 2.74 mi. from point on NC 18 north of East City limits of Morganton, southwest to point on US 70 west of Morganton, Proj. 8.29156, US-1266(2), S 1266(1), Burke Co. CD 9/12.

▲† **Arundel Corp.**, 4420 E. Eagr. St., Baltimore, Md., CA $1,580,126, dredging Cooper and Shipyard Rivers, Charleston, SOUTH CAROLINA. U. S. Eng., Charleston Dist., 209 King St., Charleston, S. C. CD 9/20, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery 4, Bids opened 9/23,

Ala.—**Wright Contr. Co.**, Brookhaven Rd., Columbus, Ga., LB $1,273,906, base and bit. 13.651 mi. from county road 6 NE to Ala. 83 on Inter Rte. 65; Prop. A, 6.429 mi., Conecuh Co.;

Ala.—**Ballenger Paving Co., Inc.**, Box 228, Greenville, S. C. & **Southeastern Hy. Contr. Co.** Gainesville, Ga., LB $1,535,311, base and bit. 13.651 mi. from county road 6 to Ala. 83 on Inter Route 65; Prop. B, 7.222 mi. Conecuh Co. CD 9/7.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 9/21,

La.—**T. L. James & Co. Inc.**, Box 531, Ruston, La., LB $188,017, (2 bidders), bit. hot mix overlay 7.209 mi. Opelousas-Poet Barre Hy., Rte. 190, SP 12-12-11 & 12-13-37; FAP F-169(2), St. Landry Parish; LB $467,081 (2 bidders) aggreg. type base course 0.048 mi. Krotz-Springs Interchange, Rtes. 190 & 71, SP 12-13-33 FAP F 169(18), St. Landry Parish;

La.—**Sabine Dredging & Constr. Co., Inc.**, Box 548, Port Arthur, Tex., LB $1,180,646, (2 bidders), hydraulic embankment Pontchartrain Bridge, Slidell Hy. 2.2 mi. SP 740-00-45, FAP 1-10-5 (30-263), St. Tammany Parish;

La.—**Spoher Constr. Co.**, Baton Rouge, La., 1721 Hood Ave., Baton Rouge, La., LB $417,190, (2 bidders), grading, drainage structures 1.29 mi. Tangipahoa River Bridge and aproaches, Franklinton Hy., Rte. 16. SP 47-01-17 FASP S-296(2), Tangipahoa Parish. CD 9/8.

▲ **KENTUCKY**—Commonwealth of Kentucky, Dpt. Hys., Frankfort, Bids opened 9/23,

Ky.—**Ralph Myers Contr. Corp.**, Box 230, Salem, Ind., LB $1,074,981 (11 bidders), b. conc. 2.803 mi. Covington-Tennessee State Line, I 75-6(3)133 F 174 (12), Scott Co.;

Ky.—**Codell Constr. Co.**, Codell Bldg., Winchester, Ky., LB $2,160,148 (9 bidders), c. conc. 6.856 mi. Burnside-Whitley City, F 110(8), Pulaski Co. CD 9/8.

▲ **Sam P. Maury Constr. Co.**, 2665 Broad Ave., Memphis, Tenn., CA $1,599,622, est. $1,700,000, tunnel under city airport's North-South Runway to carry four lanes of traffic, MEMPHIS, TENN. City, City Hall, Memphis, Tenn. CD 8/23.

BUILDINGS—LB & CA

▲ **Jefferson Parish School Bd.**, 519 Huey Long Ave., Gretna, La., rejected bids Sept. 7 Elsie Park HIGH SCHOOL, GRETNA, LA. LB $1,304,000. CD 9/12, under LB.

▲† **Grinnell Co., Inc.**, 260 West Exchange, Providence, R. I., CA $3,750,000, installation piping sys., Paradise STEAM PLANT, PARADISE, KY. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. Awarded Sept. 28. Grand total $4,687,377, CD 3/25.

Graver Water Cond. Co., 216 W. 14 St., New York, N. Y., CA $624,877, installation demineralizers and filters at Paradise Steam Plant (Paradise, Ky.);

Yuba Bedford Corp., Bedford, Ind., CA $312,500 overhead traveling cranes Paradise Steam Plant Paradise, Ky.).

▲ **J. A. Jones Constr. Co.**, 1805 Hayes St., Nashville, Tenn., LB $1,299,000, fdn. and ground floor for 15 story HOSPITAL ADDN., MEMPHIS, TENN. Baptist Hospital, 899 Madison Ave., Memphis, Tenn.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 12, 19 Michigan — October 25 Wisconsin

▲ **Ill., Chicago**—BA 10/14—Dpt. Purchases, City Hall, Zone 2, No. 80.82-60-31, auxiliary outlet sewers, Central South Side System, $1,300,000. B. C. Ellers, 320 N. Clark St., engr. CD 2/13/59.

▲ **Ill., Chicago**—MAINTENANCE FACILITIES—BA 10/17—Dpt. Purchases, City Hall, Zone 2, No. 80. 85-59-112A, Contract RB 15, maintenance facilities for Delta Airlines, Chicago O'Hare Airport, Park Ridge, $1,750,000. Naess & Murphy, 224 S. Michigan Ave., Zone 4, engrs. CD 4/7, under LB.

BUILDINGS—BA

▲ **Ill., Chicago**—HOUSING—BA 10/18—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, CHA Proj. Illinois 2-37, Stage II, eight 16 story, 1,264 unit housing, underground utilities, related site imprvs., bounded by W. 43rd St., S. State St., W. 47th St. and railroad right-of-way west of South Federal St. Plans deposit $75. Shaw, Metz & Assocs., 208 S. LaSalle St., Zone 4, archts.-engrs. CD 3/22/59.

▲ **Ill., DeKalb**—DORMITORY etc.—BA 11/3—State Teachers College, State Office, Bldg., Springfield, dormitory and dining hall, Northern University, $4,250,000. Schaeffer Wilson & Evans, 710 Peoples Bank Bldg., Bloomington, archts. CD 2/26/58.

▲ **Ill., DeKalb**—UNIVERSITY CENTER—BA 11/10—State Teachers College, State Office Bldg., Springfield, University Center, Northern University, $2,275,-000. Gilbert A. Johnson, American National Bank Bldg., Rockford, archts. CD 2/26/59.

BUILDINGS—SLC

▲ **Ill., Chicago**—APARTMENTS, etc.—Presbyterian-St. Luke's Hospital, 1753 Congress St., soon lets contract, 11 story and medical staff apartment. $1,250,000. Skidmore, Owings & Merrill, 30 W. Monroe St., Zone 3, archts. CD 3/5/59.

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—State Hy. Dpt., in the office of John Peters, chn., State House Annex, Indianapolis, Ind.—**Gast Constr. Co.**, 216 S. Columbia St., Warsaw, Ind., CA **$471,463**, c. conc. 1.292 mi. U.S. 52, Railroad St., from S.E. of Grant St. to N.W. of north corporation line, Fowler, Proj. F-75(16). Contr. R-5044, Benton Co.;

Ind.—**J. S. O'Connor & Sons**, 2104 Miner, Fort Wayne, Ind., CA **$1,727,021**, c. conc. 2.577 mi. IR 80, Arizona St. to E. of SR 51, Hobart, Proj. I-80-1(7), Contr. R-5045, Lake Co.;

Ind.—**McMahan Constr. Co.**, Luxas and Wentzel Sts., Rochester, Ind., CA **$446,525**, c. conc. 0.368 mi. US 231, Lafayette, 3rd St. from Brown to Salem St., 4 St. from Wall to Salem St., Salem and Union Sts. from 4 St. to east end of Wabash River bridge, Proj. U-829(6); also 0.366 mi. County Road, Canal St. extending north from Salem St., Proj. U.S.-154(4), Contr. R-5047, Tippecanoe Co.

▲ **Herlihy-Mid-Continent Co.**, 407 S. Dearborn St., Chicago 5, Ill., LB **$1,418,494**, Schedule A; LB **$1,188,-119**, Schedule B, three railroad underpasses, two rein.-con. railroad culverts, hy. culvert, railroad roadway embankment, related sewer, drainage, street work, Calumet Sag Channel Navigation Proj., BLUE ISLAND, ILL. Baltimore & Ohio Chicago Terminal Railroad Co., C. E. Jackman, ch. engr., 1302 Baltimore & Ohio Bldg., Baltimore and Charles Sts., Baltimore 1, Md. Bids Aug. 26. CD 8/4.

▲ **Santucci Constr. Co.**, 5015 Church St., Skokie, Ill., CA **$3,001,500**, est. $3,750,000, Phase 1, No. 80.85-60-124, RB-27, utilities, Chicago O'Hare International Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Bids Sept. 9. CD 9/20, under LB.

▲† **Kuhne Simmons Co., Inc.**, 106 S. Neil St., Champaign, Ill., CA **$1,727,565**, modifying 49 airmen's dormitories, Chanute Air Force Base, IFB 11-602-60-68, RANTOUL, ILL. Base Procurement Office, Chanute Air Force Base, Rantoul, Ill. Bids July 1. CD 7/22, under LB.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Zone 26,

Mich.—**Saginaw Asphalt Paving Co.**, 3200 Carrollton St., Saginaw, Mich., CA **$506,973**, 12.2 mi. wid'n. roadway and surf. M-13 from M-21 north to M-57, Genesee Co.;

Mich.—**Cooke Contg. Co.**, 1116 Penobscot Bldg., Detroit, Mich.; **Rogers Constr. Co.**, 14836 Grand River Ave., Detroit, Mich. and **Jutton-Kelly**, 13240 Alber Ave., Dearborn, Mich., CA **$1,998,829**, paving roadways and ramps and temp. roads, 3 bridges, 2 pumping stations on Southfield Expressway between Orange Lawn and Schoolcraft, Detroit, Wayne Co.;

Mich.—**Raff & Dexter**, Box 9517, Cedar St. Annex, Lansing, Mich., CA **$1,790,195**, 0.871 mi. dual concrete pavement and 4 bridges on US 16 from west side Grand River to Cheney Ave., Grand Rapids, Kent Co. Grand total $4,295,961. Bids Sept. 7, awarded Sept. 20. CD 9/15, under LB.

BUILDINGS—LB & CA

▲ **Midwest Piping Co.**, 1450 S. 2nd St., St. Louis 4, Mo., CA Est. **$2,000,000**, fabricate and erect piping, LAKE SHORE STATION, CLEVELAND, O. Cleveland Electric Illuminating Co., Illuminating Bldg., Cleveland, O. CD 4/25, under CA.

▲ **Lester Calcim Co.**, Bd. of Trade Bldg., Indianapolis, Ind., CA Est. **$3,500,000**, general contract HOUSING CENTER, Indiana Retired Teachers Community at south edge of city, GREENWOOD, IND. Indiana Retired Teachers Community and Indiana Teachers Assn., c/o Dr. Sumner D. Martin, Franklin, Ind. McGuire & Shook Co., 150 W. Market St., Indianapolis, Ind., archt. CD 2/19/58.

▲ **R & R Constr. Co.**, 735 Park Ave., Alton, Ill., CA **$1,353,287**, 100 unit HOUSING Proj. Ill. 55-1, west of Upper Belle St., ALTON, ILL. Alton Housing Auth., 604 First National Bank Bldg., Alton, Ill. Bids Aug. 18. CD 8/24, under LB.

▲ **Lake County Builders**, 1220 Grand Ave., Waukegan, Ill., CA **$1,425,000**, 125 unit Marion Jones HOUSING Proj., North Chicago, WAUKEGAN, ILL. Wake County Housing Auth., 7 N. County St., Waukegan, Ill. Bids Sept. 1. CD 9/23, under LB.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 13, 20, 21 Kansas — October 14 Minnesota
November 3 South Dakota

STREETS AND ROADS

October 13, 20, 25 Kansas — October 14 Minnesota
October 18, 19 Texas — November 3 South Dakota

BUILDINGS—BA

▲ **Minn., Minneapolis**—HOSPITAL—BA 10/12—Eitel Hospital, 1375 Willow St., 3 story, wing, ground floor and bsmnt. hospital. $1,500,000. The Cerny Assocs., 300 First National Concourse Bldg., archts. CD 5/18, under LB.

▲ **Minn., Mankato**—PHYSICAL EDUCATION—BA 10/13—State Dpt. Admin., 19 State Capitol, St. Paul, physical education, Mankato State College. $1,957,-458. Plans deposit $50. Extended date. Grafunder-Nagle Assocs., 688 Sexton Bldg., Minneapolis, archts. CD 9/7.

▲ **Tex., Fort Stockton** — SCHOOL — BA 10/18 — Fort Stockton Ind. School Dist., 1 story, 107,500 sq. ft., steel frame, masonry high school. $1,500,000. Plans deposit $100. Groos, Clift & Ball, 1900 Kermit Hgy., Odessa, archts. Yandell, Cowan & Love, 417 Fort Worth Natl. Bank Bldgs., Fort Worth, engrs. CD 4/8/59.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, Bids opened Sept. 22,

S. D.—**Western Contg. Corp.**, 400 Benson Bldg., Sioux City 16, Iowa, LB **$3,269,461**, 12.252 mi. on I 29 from ½ mi. N. of Junction City to SE of Elk Point, I 29-1(9)15, Union Co., LB **$357,001**, 0.501 mi. on US 16 from I 90 west, F 018-3(3), Minnehaha Co;

S. D.—**Woodrich Constr. Co.**, 201 18th Ave. South, Hopkins, Minn., LB **$1,173,714**, 3.310 mi., on I 90 from ½ mi. west of US 77 west, I 90-9(8)401, Minnehaha Co. CD 8/19.

▲† **Bushman Constr. Co.**, 301 Schneider Bldg., St. Joseph, Mo., CA **$1,818,343**, est. $1,913,000, Missouri River Basin Proj., earthwork and structures for Sherman Feeder Canal Station 24 plus 00 to 656 plus 48, Arcadia, Custer, Valley and Sherman Counties, Spec. DC 5368, NBERASKA. Bureau Reclamation, Dpt. Interior, St. Paul, Neb. Bids Aug. 25 awarded Sept. 20. CD 8/30, under LB.

▲† **Bushman Constr. Co.**, 301 Schneider Bldg., St. Joseph, Mo., LB **$1,682,722**, est. $1,842,969 (8 bidders), Missouri River Basin Proj., earthwork, structures for Sherman Feeder Canal incl. tunnel, Arcadia, Sherman Co. Spec. DC 5391, NEBRASKA. Bureau Reclamation, Dpt. Interior, St. Paul, Neb. Bids Sept. 27. CD 8/24.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City, Bids opened 9/23,

Okla.—**Worth Constr. Co.**, 300 Greenleaf Ave., Fort Worth, Tex., LB **$1,223,855**, est. $1,459,550 (8 bidders), 4-lane c. conc. paving 5.588 mi. I 35 north and west of Perry, Noble Co.; LB **$1,009,983**, est. $1,178,931 (8 bidders), 4-lane c. conc. pavement 5.092 mi. I 35 north and west of Perry, Noble Co.;

Okla.—**Broce Constr. Co.**, Woodward, Okla., LB **$983,651**, est. $1,075,781 (7 bidders), sand asph. base, b. conc. surf. 5.81 mi. I 40, Canadian County Line, Caddo Co.;

Okla.—**Ben Haskins Constr. Co.**, Cordell, Okla., LB **$612,243**, est. $502,063 (2 bidders), grading, draining 6.752 mi. US 75, north of Tulsa County Line, Washington Co. CD 9/6.

▲ **TEXAS**—State Hy. Comn., Austin,

Cage Bros., 6959 San Pedro, San Antonio, Tex., CA **$3,056,719**, grading, strs., st. sewer and conc. pvt., 1.482 mi. Hy. IH 20, Proj. I 20-5(34), Dallas Co. Bids Sept. 20. CD 9/23, under LB.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened Sept. 21,

Tex.—**San Jacinto Equipment Co.**, P. O. Box 162 Bellaire, Tex., LB **$3,698,809**, grading, cement stab. base concrete pvt. and b. conc. pvt., 3.555 mi., Hy. I 610, Proj. U535(10)-1610-7(76), Harris Co.,

Tex.—**R. W. Gibbons, Inc.**, Box 7067, Fort Worth, Tex., LB **$125,970**, widen pvt., strs., sp. conc. base and pvt., 1.886 mi. Hy. U. S. 81 and St. 114, Proj., C 13-10-28, etc., Tarrant and Wise Counties. CD 8/25.

▲ **TEXAS**—State Hgy. Comn., Austin,

Tex.—**Cage Bros.**, 6959 San Pedro, San Antonio, Tex., CA **$992,671**, grading, strs., fl. base and b. conc. pvt., 25.817 mi. Hy. St 35, Proj. F 817(4), etc., Refugio and Aransas Counties;

Tex.—**Gilvin-Terrill, Inc.**, Box 9027, Amarillo, Tex., CA **$573,604**, grading, strs. and fl. base and two crse. surf. treatment, 3.026 mi. Hy US 83, Proj. F 67(2) Wheeler Co.;

Tex.—**South Texas Constr. Co.**, Box 3536, Corpus Christi, Tex., CA **$917,368**, grading, ext. strs., conc. pvt., wid'n. and ft. base sidrs., 21.113 mi. Hy SH 36, Proj. S 778(4), Fort Bend and Brazoria Counties;

Tex.—**Schwape Engrs., F. M. Reeves & Sons**, 218 W. Little York, Houston, Tex., CA **$628,207**, strs. and connect pvt., 0.191 mi. Hy. IH 45, Proj. I 45-1 (40), Harris Co.;

Tex.—**Cecil Ruby Co., Inc.**, Brown Bldg., Austin, Tex., CA **$1,588,604**, grading, strs., fl. base and b. conc. pvt. 5.699 mi. Hy. IH 35, Proj. I 35-3(21), Hays Co.;

Tex.—**Livingston Constr. Co., Inc.**, Box 1012, La Porte, Tex., CA **$551,681**, grading, strs., base and surf., 11.596 mi. Hy FM 1410 and 1663, Proj. S 2376 (1), etc, Chambers Co. Grand total $5,252,235. Bids Sept. 20. CD 9/23 under LB.

† **Bridge Co.**, P. O. Box 1590, Dallas, Tex., LB **$1,-815,967**, (12 bidders), spillway at Navarro Mills Dam, Austin, CIVENG-41-443-61-2, TEXAS. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. CD 9/13.

BUILDINGS—LB & CA

▲ **Standard Constr. Co.**, 212 S. Sixth St., Minneapolis, Minn., CA **$2,033,000**, 5 story St. Anne HOSPITAL HOME FOR AGED, WINONA, MINN. Sisters of the Third Order Regular of St. Francis, Assisi Heights, Rochester, Minn. Bids Sept. 16. CD 9/22, under LB.

▲ **Long Constr. Co.**, 3515 Broadway, Kansas City, Mo., CA Est. **$1,500,000**, 7 story, 114,000 sq. ft. concrete block and brick OFFICE and 220 car GARAGE, 47 St. between Summit and Madison Sts., KANSAS CITY, MO. The John Hancock Mutual Life Ins. Co., 3123 Troost St., Kansas City, Mo. Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., archts. Edw. W. Tanner & Assocs., 310 Ward Parkway, Kansas City, Mo., assoc. archts. Awarded Aug. 15.

▲ **Dickie Constr. Co.**, 317 N. 11 St., St. Louis 1, Mo., CA, 1 story, 300x300 ft. masonry, precast and prestressed concrete panels, steel, etc., SHEET MFG. PLANT, Hy. 66 By-pass and Larrimore Rd., ST. LOUIS COUNTY, MO. International Paper Co., Container Div., Paisippany Rd., Whippany, N. J. Bids Sept. 7. CD 9/7.

▲ **George H. Burden & Co.**, E. 5th and McLean Sts., Little Rock, Ark., CA Est. **$1,500,000** (3 bidders), 100,000 sq. ft. SHOPPING CENTER, 27th, Olive, 29th, Main, PINE BLUFF, ARK. Jefferson Square, c/o Jack Farris, Stephens Bldg., Little Rock, Ark. Bids Sept. 8, awarded Sept. 15. CD 9/1.

▲ **Walter Droemer**, Box 570, Giddings, Tex., CA **$1,404,999**, HIGH SCHOOL and new Central ELEMENTARY SCHOOL, BROWNWOOD, TEX. Brownwood Ind. School Dist., Brownwood, Tex. Caudill, Rowlett & Scott, 3400 Montrose Blvd., Room 300, Houston, Tex., archts.-engrs. CD 8/30.

▲ **Temple Associates**, Box 308, Diboll, Tex., LB **$1,950,425**, est. $650,000 (6 bidders), 4 story, part bsmnt. 85,000 sq. ft., concrete, masonry PLANT SCIENCES, COLLEGE STATION, TEX. A & M College of Texas, College Station, Tex. Bids Sept. 9. CD 8/16.

▲ **Ramsey Steel Co.**, El Paso, Tex., CA **$1,800,000**, 75 x 800 ft. steel MILL, EL PASO, TEX. Border Steel Rolling Mills, Ramsey Steel Co., Edward J. Winter, El Paso, Tex. Grand total $3,925,000. CD 9/21;
Border Steel Co., El Paso, Tex., CA **$1,700,000**, steel melt SHOP (El Paso, Tex.);
J. E. Morgan & Sons, El Paso, Tex., CA **$425,000**, OFFICE-SHOP-STORAGE (El Paso, Tex.).

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 18 Washington
October 26, November 10 California
November 16, December 1 California

STREETS AND ROADS

October 11 Utah — October 18 Idaho, Washington
October 21 Arizona — October 26, 27 California
November 2, 3, 9, 10, 17 California
December 1 California

▲† **Utah, Brigham City**—PLANT NO. 78—BA 10/25—Thiokol Chemical Corp., 64 N. Main St., 10,750 sq. ft. Thiokol-Air Force Plant No. 78, first stage, solid propellant motor for Minuteman Intercontinental Ballistic Missiles, Div. of Air Research & Development Command, $17,000,000. CD 2/8.

▲ **California**—TUNNEL—BA 11/16—State Div. Hys., 1120 N St., Sacramento, third two lane 3,371 ft. long, 28 ft. roadway, 4 ft. sidewalk tunnel, Sign Rte. 24 through Berkeley Hills at Caldecott Tunnel at East City limit of Oakland, Alameda Co. $12,500,000. CD 9/16.

BUILDINGS—BA

▲ **Utah, Spanish Fork**—SCHOOL—BA 10/17—Nebo School Dist., masonry, steel Senior High School. $1,750,000. Plans deposit $100. Ashworth Architects, Box 566, Provo, archts. CD 2/12/59.

▲ **Idaho, Idaho Falls**—SCHOOL—BA 10/18—School Dist. No. 90, 1 story, 82,000 sq. ft. masonry, frame Junior High School. $1,400,000. Plans deposit $100. N. J. Hamill & Assocs., 5789 3rd St., archts. CD 4/5.

▲ **Calif., Sacramento** — PUBLIC WORKS BUILDING ADDN.—BA 10/25—State Div. Architecture, 1120 N St., 6 story, 95,000 sq. ft. public works bldg. addn. W. O. 4295SC. $1,375,000. Plans deposit $100. CD 12/5/58.

(Continued on page 90)

TAKES OFF ITS HAT TO NOBODY!

Machine, lag, and carriage bolts.
All sizes. Quick delivery from stock.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export distributor: Bethlehem Steel Export Corporation.

BETHLEHEM STEEL

BETHLEHEM STEEL

NOW...
CUT PLYWOOD FORM COSTS
WITH THOMPSON'S WATER SEAL

Note these cost-saving features:

- **Prevents absorption of water in concrete forms. Forms last longer.**
- **Saves labor. Eliminates cost of cleaning, sanding and recoating after each pour.**
- **Thompson's Water Seal permits eight or more pours per plywood form (min. 4 pours per side).**
- **Eliminates form damage during stripping. Forms can't stick. Won't soften wood, prevents deflection.**
- **Easy to apply by brushing, dipping or spraying.**

Thompson's Water Seal is deep penetrating, colorless, leaves no residue, won't stain concrete; surface is dust-free, ready for painting.

Available in 5 and 55 gallon drums from suppliers to the construction industry.

See catalog in Sweets Architectural file and Light Construction file.

Thompson's

MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco, Los Angeles, San Diego, Portland, Chicago, Seattle, Denver, Dallas, Houston, St. Louis, St. Paul, Detroit, Philadelphia, New York City, Memphis, Tampa, Cleveland, Atlanta, Honolulu. Factory: King City, Calif. 5647R

(Continued from page 88)

HEAVY CONSTRUCTION—LB & CA

▲ **ARIZONA**—State Hy. Dpt., 206 S. 17th Ave., Phoenix, **L. M. White Comtg. Co.**, Box 6008, Tucson, Ariz., CA **$1,605,216,** construction eastbound and westbound roadway, grading, draining, select material, aggregate base, asphaltic concrete, construction 3 concrete slab bridges approx. 7 mi. over State Route 86, Benson-Steins Pass Hy., Cochise Co. Bids Sept. 16, awarded Sept. 21. CD 9/22.

▲ **Howard S. Wright Constr. Co.**, 414 Pontius St., Seattle, Wash., CA **$3,500,000,** monrail system for Century 21 Exhibition, SEATTLE, WASH. Century 21 Exposition, Exposition Bldg., Seattle 9, Wash. CD 3/21, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 9/27,
Guy F. Atkinson Co., P.O. Box 259, Long Beach, Calif., LB **$2,576,465,** (7 bidders), substructure, 1,500 ft. toll bridge connecting San Pedro and Terminal Island, Los Angeles Harbor, Los Angeles Co. CD 8/16.

▲† **L. E. Dixon Co. & W. E. Kier Constr. Co.**, 409 S. California St., San Gabriel, Calif., CA **$1,327,000,** addnl. operations area facilities, incl. recreation facilities, general warehouse, storehouse, commissary, EM club, training pool, etc., Naval Air Station, NBy 29251, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Rm. C112, San Bruno, Calif. Bids Sept. 21. CD 9/28, under LB.

▲ **Radco Constr., Inc.**, 1901 W. 8 St., Los Angeles, Calif., CA **$1,431,351,** Proj. 130, Storm Drain, Unit 2, Lines A, B, C & D, and Pump Dist. No. 7 and Proj. 457, Unit 1, Long Beach, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids July 22. CD 7/29, under LB.

▲ **HAWAII**—State Div. Hys., 465 S. King, Honolulu, **Morrison-Knudsen Co., Inc.**, 603 Hoge Bldg., Seattle 4, Wash. LB **$3,369,257,** King and Middle St. section of Lunalilo Freeway. CD 8/7/59.

BUILDINGS—LB & CA

▲ **S. P. Wertheimer & Assocs., Inc.**, 5911 77th St. S.E., Mercer Island, Wash., Day Labor, **$1,500,000,** three Mercer Isle APARTMENTS, MERCER ISLAND, WASH. CD 6/8.

▲ **Nielson Constr. Co.**, 3127 Jefferson St., San Diego, Calif. and **Lindgren & Swinerton,** 1631 Beverly, Los Angeles, Calif., CA **$2,429,200,** Montgomery Ward STORE, Mission Valley Center, Mission Valley, SAN DIEGO, CALIF. Mission Valley Shopping Center, (Montgomery Ward) Mission Valley, San Diego, Calif. Bids Sept. 13, awarded Sept. 23. CD 8/26.

▲ **Belview Builders,** 1336 Bayshore Hy., San Jose, Calif., Owner Builds, **$2,500,000,** 3 story, 72 unit Place de Mer COOPERATIVE APARTMENTS south of LA SELVA BEACH (BR. WATSONVILLE), CALIF. Johnson, Hawley & Assoc., 800 Welch Rd., Palo Alto, Calif., archts. CD 9/20.

CANADA

BUILDINGS—BA

▲ **Man., Fort Garry**—ANIMAL SCIENCE—BA 10/12—University of Manitoba, steel, concrete animal science, University of Manitoba, $2,000,000. Plans deposit $100. Smith, Carter, Searle Assocs., 65 Dewdney St., Winnipeg, archts. CD 9/27.

▲ **Alta., Edmonton** — TREATMENT—BA 10/26 — City, City Hall, steel, concrete 600 bed active treatment bldg., Royal Alexandra Hospital, Kingway west of 102nd St. $9,000,000. Plans deposit $200. Rule, Wynn & Rule, 11422 Jasper Ave., archts. CD 6/10/59.

HEAVY CONSTRUCTION—LB & CA

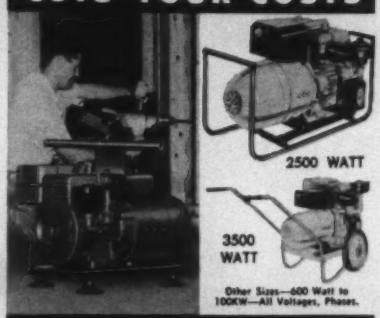
▲ **Majestic Contractors, Ltd.**, Edmonton, Alta., CA 113 mi. 36 in. gas main line from Alberta-British Columbia borders, Crowsnest Pass to near Priddis, 63 mi. 3 in. main from Rocky Mountain House to Cynthia and 36 mi. 22 in. lateral to Rimbey area, ALBERTA and BRITISH COLUMBIA. Alberta Gas Trunkline Co., Ltd., 320 96th Ave. S.W., Calgary, Alta. Total est. **$90,000,000,** CD 4/13;
Alberta Consolidated Pipe Line Builders (Banister Constr. Co., Ltd., Edmonton, Alta., Piggott Constr. Co., Ltd., 608 Renfrew House, Calgary, Alta. and **Marine Pipeline and Dredging Ltd.,** 228-818 8th Ave., S.W., Calgary, Alta.) CA, 113 mi. 36 in. main line from Priddis area to point near Rocky Mountain House (Alberta-British Columbia);
Dutton-Williams Bros., Ltd., 3rd floor, North Canada Oil Bldg., Calgary, Alta., CA, 62 mi. 30 in. main line from Cynthia to west of Whitecourt, 20 mi. 22 in. lateral to Whitecourt area (Alberta-British Columbia).

BUILDINGS—LB & CA

▲ **Smith Bros. & Wilson Ltd.**, 1267 Richards St., Vancouver, B. C., CA **$3,057,352,** 6 story, rein.-con. 160 bed HOSPITAL, NANAIMO, B. C. Nanaimo & District Hospital Bd., Nanaimo, B. C. Gardiner, Thornton, Gathe & Assocs., 1520 Alberni St., Vancouver, B. C., archts. Bids Aug. 31, awarded Sept. 22. CD 9/12, under LB.

▲ **Gage Constr. Co., Ltd. & Wycliffe Homes Ltd.**, 567 Sheppard Ave. E., Toronto, Ont., contract cancelled, SHOPPING CENTRE, Main St., HAMILTON, ONT. $2,500,000. CD 7/7, under CA.

PORTABLE POWER CUTS YOUR COSTS



Other Sizes—600 Watt to 100KW—All Voltages, Phases.

USE POWER TOOLS WITH DEPENDABLE
WINPOWER ELECTRIC PLANTS

You save 4 big ways with a WINPOWER electric plant:

(1) automatically idles plant when load is off . . . cuts fuel cost . . . lowers noise . . . extends engine life;
(2) costs less to buy . . . priced to beat all competition;
(3) speeds up production by supplying low cost, instant power on the job;
(4) gives you long and dependable service backed by 35 years of manufacturing experience. Portable cradle units or two wheel dolly types.

FREE BROCHURE AND COMPLETE INFORMATION SENT BY RETURN MAIL.

WINPOWER MFG. CO.
Dept. ENR NEWTON, IOWA

PHOENIX BRIDGE COMPANY

Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

AISC

General Office and Shops
PHOENIXVILLE, PA.

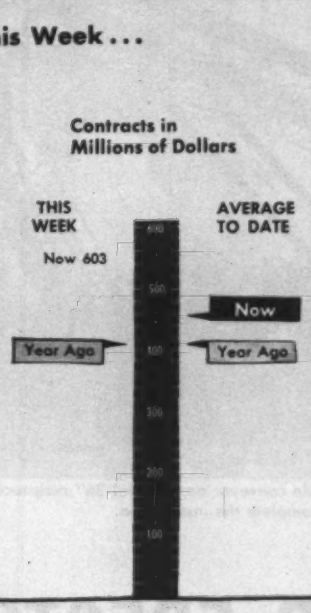
Subsidiary—Phoenix Steel Corporation

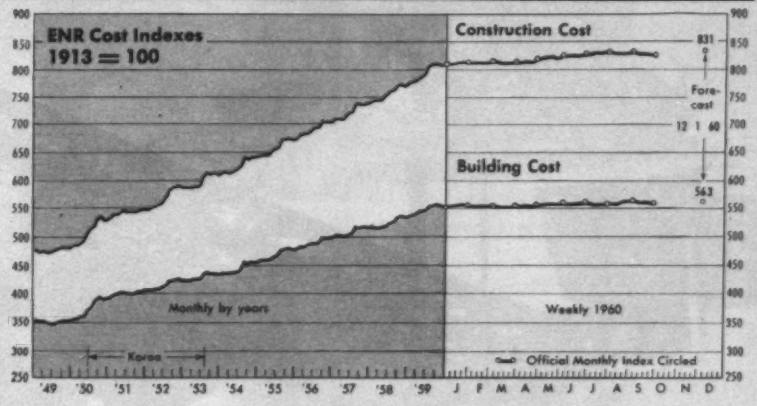
DO WE HAVE YOUR COMPLETE ADDRESS?

Not unless you included your postal zone number when moving, subscribing or renewing subscriptions.

Construction Scoreboard

This Week . . .




ENR Cost Indexes 1913 = 100
Construction Cost
831
Fore-cast
12 1 60
Building Cost
563
Monthly by years
Weekly 1960
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of Sept. 29 1960	% Change from Sept. 1 1960	% Change from Oct. 1 1959
Construction Cost	829.58*	−0.2	+2.2
Building Cost	561.45*	−0.2	+1.1

* Official Monthly Index for October, 1960.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week millions	Cum. 40 wks 1960	Chge '59-'60 %
All Heavy Construction	$602.8	$18,061.0	+11
By Ownership			
PRIVATE	427.6	9,767.8	+20
PUBLIC	175.2	8,293.2	+ 2
State & Municipal	150.6	6,431.1	+12
Federal	24.6	1,862.1	−22
By Type of Work			
PUBLIC			
Waterworks	6.5	369.2	+15
Sewerage	8.0	450.8	−12
Bridges*	9.6	647.0	+40
Highways	69.1	2,623.4	+11
Earthwork, Dams & Waterways	5.3	612.6	−15
Buildings:			
Excl. Housing	54.3	1,896.1	−10
Housing	3.2	533.8	+3
Unclassified	19.2	1,163.3	+2
PRIVATE			
Buildings:			
Mass Housing	87.7	4,762.8	+31
Commercial	42.7	1,917.0	+8
Industrial	26.9	2,157.2	−9
Unclassified	270.3	927.8	+130

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Sept. 29 millions	Cum. 39 wks 1960	Chge '59-60 %
Corporate Securities	$ 86.0	$2,363.5	−14
State and Municipal:			
All Except Housing	113.9	5,021.2	+9
Housing	3.7	189.3	+152
Federal Loans	29.5	157.5	+42
Federal Aid	....	2,717.8	−13
Total Nonfederal	$233.2	$10,449.4	−2
Federal Appropriations:			
Projects in U.S.	....	$2,556.1	−28
Outside U.S.	....	157.8	+3486
Total New Capital	$233.2	$13,163.2	−7

This Month . . .

WAGE RATES, 20-cities' average	Oct. 1960	% Change from Sept. 1960	% Change from Oct. 1959
Common	$2.739	0	+4.4
Skilled (average 3 trades)	4.09	+0.07	+4.0
Bricklayers	4.307	0	+3.4
Structural Ironworkers	4.140	+0.2	+4.3
Carpenters	3.824	0	+4.5
Equipment operators (average three types)	3.718	+0.2	+4.6
MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	116.65	−1.2	−6.3
Lumber, 2x4 Pine, per M fbm	108.73	−0.6	−1.4
Cement, bulk, per bbl	4.02	0	+1.5
Sand, per ton	2.362	0	−4.3
Ready-mixed concrete, per cu yd	14.31	0	+1.6
Gypsum sheathing, 1/2″x2′x8′, per Msf*	62.56	−0.2	−0.2
Fiber board sheathing, 1/2″ sq. ed., per Msf*	70.91	−1.5	−3.1
Mineral wool insulation, 3′ batts, per Msf*	68.03	0	−0.6
Crushed stone, 1 1/2″, per ton, CL	2.648	+0.1	−1.7
Concrete blocks, sand/gravel, 8″x8″x16″, each*	0.2284	−0.9	+8.8

Latest Month . . .

	Sept. 1960	Aug. 1960	Sept. 1959
Brick, common per M	41.02	+0.3	+3.5
Lime, hydrated finishing, per ton, CL	38.78	+0.3	+0.2
Structural clay tile, 3x12x12″, per M, 2,000 up*	188.20	0	+2.7
Vitrified clay sewer pipe, std 12″, per ft	1.408	+0.3	+3.1
Concrete sewer pipe, 12″, per ft	1.419	0	+6.0

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1959	1913=1000	1949=1000	1913=100	1949=100	1913=100	1949=100
Sept	811.76	170.18	555.88	158.01	545	158
Oct	810.60	169.94	555.40	157.88	415	120
Nov	808.98	169.60	554.19	157.53	509	147
Dec	807.85	169.36	552.30	157.10	436	126
1959 Average	796.91	167.07	547.82	155.72	540	156
1960						
Jan	811.84	170.20	554.40	157.57	432	125
Feb	812.73	170.38	555.43	157.92	486	140
Mar	813.26	170.49	555.16	157.81	533	154
Apr	814.78	170.81	555.98	157.83	695	201
May	822.58	172.45	562.59	158.52	610	176
June	826.64	173.30	561.02	159.16	784	227
July	829.33	173.86	562.63R	159.93R	682R	197
Aug	830.18	174.04	562.17R	159.80R	631R	182R
Sept	830.92	174.20	562.79R	159.97R	603	174
Oct	829.58	173.92	561.45	159.59	...	...

R: Revised due to retroactive wage increases

Kaser's Barber-Greene 828 Stabilization Plant is shown in a quarry near Dexter, Ia. The 828 hydraulically erects itself in just two minutes after being towed to the job site. Heavy duty Barber-Greene portable conveyor and special 36" reciprocating feeder and trap complete the installation.

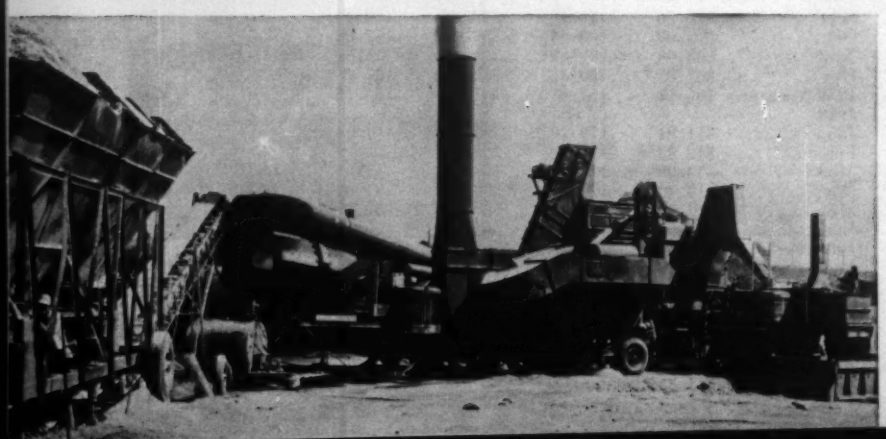
STABILIZATION MIXER ERECTS TWO MINUTES, TOPS

Barber-Greene self-erecting, portable plant gives Iowan low cost output; his two Barber-Greene asphalt plants combine to produce 1,000,000 tons of hot mix.

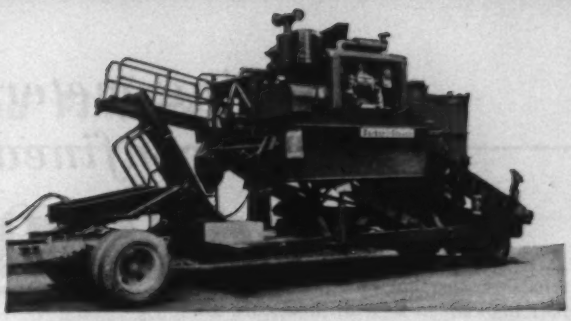
Don Kaser of Des Moines wears two hats: 1) spokesman for high type asphalt paving as a founder and past president of the Iowa Asphalt Paving Assn.; and 2) producer of high type asphalt paving and base mixes as head of Kaser Construction Co.

He's a user of Barber-Greene asphalt paving equipment since 1954 when he bought his first 848 Continuous Mix asphalt plant. Two years later he added a second 848 plant. Since that time these plants have combined to produce 1,000,000 tons of high quality, low cost mix.

Kaser Construction purchased their new Barber-Greene Model 828 Self-Erecting, Portable Stabilization Plant in 1959, and Don Kaser reports, "production was 130,000 tons the first year and we expect to mix 200,000 tons this year. "We average 500 tph, but top 600 tph during peak periods. The 828 gives us control to meet specs easily and capacity to keep up with as many trucks as the contractor can provide. These features plus 2-minute hydraulic plant erection and complete portability let us handle jobs more economically than when we mixed and spread



This 848 Barber-Greene Continuous Mix plant is producing Hot Mix Type A for the Kaser firm on a $1,000,000 contract at New Sharon, Ia. Both plants operate at a peak of 250 tph and require an average of four days to move — smoke to smoke.



Model 828 Self-Erecting Stabilization Mixer shown in travel position.

IN 600 TPH

on the road bed with a grader. Now we get far better accuracy by central plant mixing, hauling to the site and putting in place with a spreader."

Full Stabilization Plant Line — This self-erecting Model 828 is but one of four units in Barber-Greene's No. 1 stabilization plant line that offers a production range from 200 to more than 600 tph. The big 828 is also available in portable and stationary models. The smaller Model 824 produces from 80 to over 200 tph. All models are backed by unmatched experience in continuous material handling and control—your assurance of highest tonnage at lowest cost. See your Barber-Greene Distributor for the plant and the conveyor matched to your needs.

EXCLUSIVE PUGMILL FEATURES

Material forms its own mixing chamber in pugmill, eliminating need for liner plates. Centrifugal water pump and precision water meter assure water content needed for proper compaction. Twin shaft pugmill gives fast, thorough mixing. Hydraulically operated clamshell gate opens across full width of surge hopper, prevents segregation in discharging, allows operation between trucks. Enclosed gear box runs in oil bath. Paddle tips and paddle arms are reversible and replaceable. Diesel or electric power available.

Only Barber-Greene offers four different finishers plus a Road Widener-Shoulder Paver—equipment sized for all your needs.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.

Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

for setting meters
in confined locations...

USE MUELLER® ANGLE METER STOPS COUPLINGS

■ Two fittings; a Mueller Angle Meter Stop and Angle Meter Coupling, are the only fittings required to complete a meter setting in a tight location.

With the new combined O-ring seal — ground key seal design in all Mueller Meter Stops you are assured of a positive, double seal against leakage which might result from piping stresses on the stop body.

A complete range of sizes is available with either copper coupling or iron pipe threads.

Write for complete information and specifications.

MUELLER CO. Since 1857 SERVING Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

U. S. Needles Europe on Aid

- **Bundles of dollars flowing to have-not countries for development put strain on U. S.**
- **U. S. says Europe must start giving, or else we'll tie aid to purchase of domestic goods.**

The Free World's money managers met in Washington last week for the annual meeting of the world's richest and most influential international financial organizations, the World Bank and the International Monetary Fund. Much talk was of technical interest to bankers, but three basic questions pertinent to world construction ran through most of the sessions:

- How do you raise more money for faster economic development in the have-not nations?
- How is the mounting development bill to be shared among the have nations?
- How could the four international lending institutions—the World Bank, the IMF, the International Finance Corp., and the new International Development Association—do a better job of fostering development?

Although no firm answers were given, the basic theme of the discussions was vital. They did not center on whether more capital was needed, but on how much and who was to put it up. This is a firm indication that the tide of investment in underdeveloped countries—most of it for large-scale construction projects—is still on the rise. Moreover, the specific questions the bankers wrestled with brought into clearer focus both the problems and prospects involved in international development financing.

The stark fact was more obvious—despite all the capital and know-how that has been pumped into the developing countries in recent years, the rich nations still are getting richer while most of the poor nations are at best only holding their own in the race between economic and population growth. In fact, unsteady commodity markets actually have reduced the net resources available to many of them for basic development.

The rub came over the question of who is to pay how much of the mounting development bill. The U. S., the world's richest nation, has put up the lion's share so far. It also has demonstrated—by sponsoring the new Inter-American Development Bank, pledging $500 million to a social development program in Latin America, and appropriating $100 million in emergency economic aid for Africa—that it is willing to go on paying.

But the U. S. still is running a big deficit in its international balance of payments. The deficit probably will be in the neighborhood of $3 billion this year—less than the $3.8-billion and $3.3-billion deficits in 1959 and 1958 respectively, but still disquietingly large. Foreign aid outlays contribute directly and indirectly to these deficits.

European countries, meanwhile, have been gaining gold and dollars at U. S. expense and continue to do so. West Germany in particular has increased its gold and dollar reserves by some $4 billion in recent years.

U. S. Secretary of the Treasury Robert B. Anderson and Undersecretary of State C. Douglas Dillon bluntly told their European counterparts that they were not doing their share of the total Free-World job of financing development in poorer areas of the world. U. S. officials threatened, in effect, to tie all U. S. foreign aid expenditures to purchases of U. S. goods and services if more development capital is not forthcoming soon from Europe.

Tying all U. S. aid to purchases of U. S. goods actually wouldn't greatly ease the strain on the balance of payments. Officials estimate that only some $500 million of U. S. aid funds currently is being spent in foreign countries—a drop in the bucket compared to the huge U. S. balance of payment deficit. But the hope in Washington is that the threat to tie all aid will spur the European countries to a greater development financing effort. Not only would the European governments dislike losing the opportunity to earn some U. S. aid dollars, but such U. S. action probably would mean that all countries would tie their development assistance to purchases of their own goods. This would tend to tie up an important segment of world trade in tight bilateral channels.

Even if Washington's tactics in pressuring European countries into making available more development assistance are successful, there is no thought that the U. S. aid load would be lightened. On the contrary, it is likely to become heavier in response to growing needs and stiffening Communist pressure. But if the Europeans kick in more, the U. S. presumably would be forced to spend less than it otherwise would.

Ludwig Erhard, West German Economics Minister, was the principal target of U. S. criticism. Mr. Anderson and Mr. Dillon accepted provisionally British and French excuses that they already are providing as much aid as they can afford to the Commonwealth and the French communities. But German assistance so far has been limited almost entirely to short-term commercial loans to finance German exports and safe-as-gold investments in the World Bank.

The Germans promised to do more—later. They argued that it would be difficult to launch a massive government aid program before next year's elections. But they promised to try to do something before then. Meanwhile, in Bonn, Herman Abs, director of the Deutsche Bank, one of West Germany's biggest, said that within the next year private German firms will try to raise the equivalent of some $250 million to lend to underdeveloped countries on relatively liberal terms.

U. S. officials, however, are keeping their fingers crossed until they see the color of the Germans' money. Similar promises have been made in the past with very little follow-through.

The International Development Association also came into existence formally during the session. IDA will be an arm of the World Bank. It has $1 billion—of which $750 million is in hard currencies—to lend over the next five years. Loans will be for long terms, perhaps up to 50 years, at low interest rates.

Basic decisions still have to be made, however, concerning the sort of role which IDA is to play in the international development picture. It has not been decided, for example, whether IDA's long-term low interest loans will be used merely in effect to reduce the total interest load on conventional World Bank loan packages, or whether they will be used in a more experimental manner—for example, to initiate and finance long-term urban renewal programs in underdeveloped areas, which are difficult to finance on conventional terms.

Oklahoma's Tollroad Hopes Sag

Plans for two toll turnpikes in Oklahoma are thoroughly snarled. A start on one hinges on court approval of financing methods; and the second is snagged on a pessimistic traffic and earnings report.

Complicating the road proposals even more is a court action seeking to enjoin the Oklahoma Highway Department from spending state funds for construction of access roads and interchanges that would serve the toll highways.

The turnpike that would probably move first—provided that the state supreme court approves financing proposals, and a district court denies the injunction request—is an 84.6-mile route through the southwestern part of the state from Oklahoma City to the Texas border near Wichita Falls (ENR July 21, p. 27). The second road, an eastern route, would extend southward 40.2 miles from Henryetta to McAlester (see map), connecting with a planned four-lane free highway. The free road would run south to the Texas border.

Under the financing plan before the court, the taxes on gasoline bought along the state turnpike system would be dedicated to interest payments on revenue bonds for the proposed tollroads.

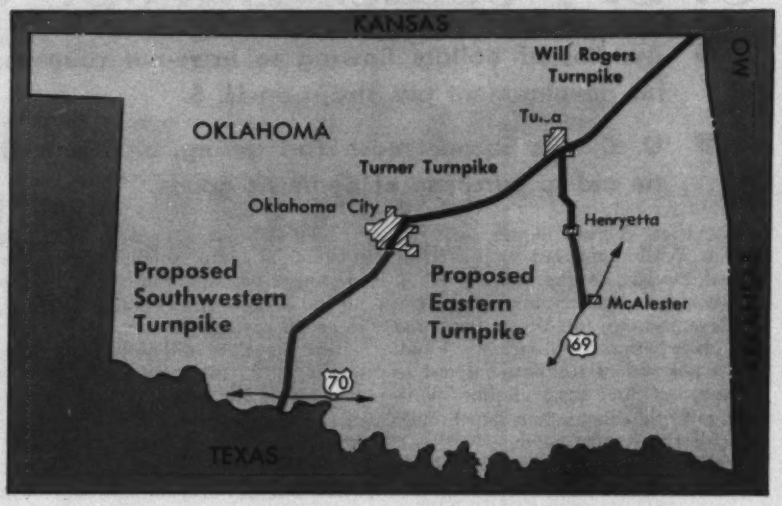
A trust fund of up to $1 million a year would be created from the gas taxes. The fund would be limited to a maximum of $4 million prior to construction and at no time could it exceed an amount equal to three years' annual interest payments on the bonds after construction. This plan would cover both proposed turnpikes and also involve the two existing tollroads—the Turner and Will Rogers Turnpikes.

The new turnpikes would require an estimated $116 million worth of construction. The Southwestern Turnpike would cost approximately $57 million, but it would also require the construction of a $17-million free-road link through Lawton and the Fort Sill Military Reservation. This link would be built with state highway department funds.

The Eastern Turnpike would cost about $30 million. Another $12 million in state highway funds would go for construction of a four-lane section north towards Tulsa from the turnpike's starting point at Henryetta.

It is such proposed expenditures that are being opposed by three members of the Muskogee Area Better Roads Association. Their attorney, LeRoy Powers, former chief counsel for the highway department, argues that construction of connecting links along the proposed turnpikes would violate the 1959 State Turnpike Act. The links should be built with turnpike funds, according to Mr. Powers. He says proposed use of state funds is an attempt "to sweeten these turnpikes for the bondholders in every way we can through the gasoline tax, free connections and the like. This cuts down the amount of money that can be spent for free roads."

Gov. J. H. Edmondson contends that the proposed state-financed highways are along regular state routes that would be built regardless of the turnpikes and that the toll sections would be access roads for the free portions.



On the basis of the traffic and earnings report by the consulting engineering firm of Wilbur Smith & Associates, New Haven, Conn., the eastern tollroad apparently would need even more financial help than is now contemplated. The report indicates the turnpike's estimated $918,000 first-year net earnings, plus all of the $1 million in the proposed gasoline tax trust fund, would not produce the minimum debt service ratio investors would consider satisfactory.

The southwestern route, however, would produce more than the desired minimum debt service ratio, according to the traffic consultants, provided the full gasoline tax trust fund was taken into consideration.

Meanwhile, in the Voting Booth

Oklahoma voters overwhelmingly defeated two proposals that would have resulted in major changes in the state's highway administration procedures and the counties' roadbuilding program.

The administrative change called for making the state's eight-member highway commission a constitutional body with the members removable only for cause. The present commission set-up is appointive, each member serving "at the pleasure" of a governor under staggered eight-year terms.

The county road proposal would have changed the system of allotting state funds to those governmental bodies for roadbuilding purposes. The state's 77 counties currently receive a total of $30 million for roads from the state. The allocations are administered completely by the county commissioners.

Had the proposal involving the counties been adopted, the counties still would have received their regular share of road-fund allocations. The money, however, would have been administered and spent by the state. In addition, the state would have been authorized to use one-third of each county's allocation for state highway construction under the federally aided highway program. The remaining two-thirds would have gone to county roadbuilding and maintenance.

The plan was proposed by Gov. J. H. Edmondson after official inquiries revealed waste, inefficiency and alleged corruption.

TODAY'S FINEST ROADS ARE PAVED WITH ASPHALT

FROM ESSO STANDARD

The Maine Turnpike is another example of how Asphalt supplied by Esso helped build a better road at lower costs. The Maine Turnpike Authority saved more than $21,000 per mile over equivalent slab type construction. Compare these advantages:

● *Unsurpassed quality* — Asphalt produced by Esso is specially refined from selected crudes to provide maximum pavement strength to resist heavy axle loads and the effects of severe frost.

● *Faster construction time* — No joints, forms, frost protection covering, or curing time required to develop full strength. More road can be completed during working months for earlier opening to traffic.

● *Winter weather resistance* — Asphalt seals out moisture and is unharmed by de-icing salts. Snow and ice naturally melt away faster, too.

● *Greater planning flexibility* — Asphalt provides low-cost flexibility in meeting traffic needs. Strengthening and widening of pavements can be accomplished, providing unlimited years of service, without interrupting traffic.

Can Asphalt supplied by Esso help you build a better road at a lower price . . . with lower maintenance costs? For more information, or technical assistance in your road building plans, write: Asphalt Products, Esso Standard, Division of Humble Oil & Refining Company, 15 West 51st Street, New York 19, New York.

ESSO

ASPHALT PRODUCTS

In Industry after Industry..."ESSO RESEARCH works wonders with oil"

SWITCH TO KON-TORK DIFFERENTIAL..

KON-TORK differential provides every Allis-Chalmers motor scraper with maximum traction to match any working condition—provides you with all-weather production.

Only Allis-Chalmers offers exclusive KON-TORK differential in every motor scraper. This traction-boosting benefit makes dirt pay under severe job conditions.

KON-TORK works automatically, whenever it's needed. In the cut, on the haul or soft fill, it helps you by automatically controlling the transfer of torque to each drive wheel . . . giving you the benefit of all available traction *all the time.*

Example: When one drive wheel hits soft going, KON-TORK takes hold and transfers torque from the slipping wheel to the wheel with solid footing to keep the machine moving out. Another nice thing

move ahead with

TRACTION MAGIC, EVEN IN MUD

about KON-TORK . . . it's simple! Only five working parts . . . never needs adjustment!

But this is only one of many features that keep Allis-Chalmers motor scrapers out front on every job. You should see what *full-power steering—double-acting bowl jacks—hydraulic forced ejection and highest apron lift* can do for your production. Try any one of 3 models from 10 to 30 yards. See for yourself. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

KON-TORK is an Allis-Chalmers trademark.

ALLIS-CHALMERS

...power for a growing world

NEW! #55-HWY Presstite Joint Sealer sets up within 60 minutes

...offers maximum adhesion...resistance to impregnation

This new cold-applied sealing compound is the ideal sealant for PCC highways, bridge decks, parking lots and industrial floors. It is a two-component polysulfide polymer that is cold-applied and cures rapidly.

It offers many physical properties and characteristics that are far superior to the regular sealers. For example:

- Greater resistance to impregnation by foreign matter.
- Ductility over a wide range of temperatures down to minus 20°F.
- Fast curing, non-tracking. Sets up track-free within approximately an hour after application.
- Maximum adhesion to clean concrete surfaces.
- High cohesive strength.
- Resists repeated cycles of freezing and thawing.

ALSO AVAILABLE: PRESSTITE #55-MIL JOINT SEALER. Designed for military and commercial airfields exposed to action and operational requirements of jet aircraft. Resists jet blast, heat, fuel and oil . . . cures quickly . . . will not track. CD 579.1 CONCRETE JOINT CURING TAPE. For freshly sawed or formed PCC joints. Protects against moisture loss from joints . . . aids in curing . . . reduces spalling . . . keeps joints clean until sealed.

WRITE DEPT. C-15 for detailed information on any or all of these products. Free samples on request.

PRESSTITE DIVISION
AMERICAN-MARIETTA COMPANY

3740 CHOUTEAU AVENUE • ST. LOUIS 10, MISSOURI

City Gets $42-Million Buildings Proposal

Minneapolis is only a short step away from getting about $42 million worth of new commercial and residential buildings for an already-cleared urban redevelopment site in the heart of the city.

All that is needed is final approval of the site and building plans by the city's Housing and Redevelopment Authority. But the key to a start on the job—corporations ready and financially able to back construction—is in the hands of the developer, Donald T. Knutson, president of Knutson Co.

The five major projects proposed would take in an area of approximately 12 acres, or one-third of the 35-acre tract designated by the city as a redevelopment area.

The buildings proposed:

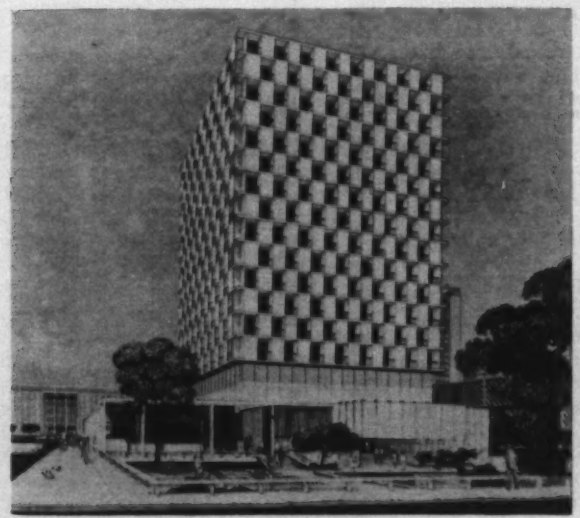
- A $9.5-million hotel for Sheraton Corp. of America, Boston. It would be 17 stories high and contain 370 rooms.
- A $6-million home office building for Northwestern National Life Insurance Co., Minneapolis.
- A $2-million area office and training school building for International Business Machines Corp., New York City.
- A $22-million apartment buildings complex.
- A $2-million shopping and entertainment plaza.

Construction on the proposed Gateway Center will start as soon as the Authority gives the sponsors a go-ahead.

The 35-acre redevelopment tract, represents a large portion of the city's downtown area devoted to business and government buildings.

Apartment buildings complex to cost $22 million.

Office building for insurance company to cost $6 million.



Hotel to cost about $9.5 million.

School and office to cost $2 million.

Construction Contracts Set Record Pace

Heavy construction contract awards in September set a record for the month. With a big boost from public works, the month's award total of $2.2 billion topped a year ago by 15%, despite the 4% shrinkage from August, which was largely seasonal.

In the first nine months, contracts were at a record pace with a cumulative total of $17.5 billion, a 10% gain over 1959.

Private industry contracts of $1.2 billion still held an edge on public works awards of $1.1 billion in September. The private total, however, slipped 4% below both August and one year ago. The $9.3 billion rolled up in the nine-month period is 17% above a year ago the biggest year since the all-time high recorded in 1956.

A brisk upturn in highways, waterworks and sewerage awards bolstered the public works sector in September, bringing the month 46% ahead of a year ago. For the first time this year, strength in state and municipal work offset still lagging federal construction. Over-all public awards of $8.1 billion are 3% ahead of last year's three-quarter period.

State and municipal construction is staging a comeback this year, although a seasonal slowdown is starting to appear. September awards of $890 million, however, are only 2% below the August pace but a fat 53% ahead of the year-ago rate. This pushes the nine-month total to $6.3 billion, 12% over a year ago, and second only to 1958 when highways soared.

Federal projects have been shrinking since the June high this year, but the $184 million in September was 22% above a year ago. This cuts the gap from 1959's nine-month period to 19%. A month ago, there was a 21% gap.

Private mass housing slipped below the year-ago rate for the second time this year. But in both cases, it was an unusual bulge in 1959 contracts in May and September that trimmed the showing of the 1960 activity. The sharp drop from August also reflected the bunching of several massive, long-term contracts in that month. For the first nine months, housing shows a 31% gain over last year's same period.

The feature in September's construction market was commercial building, which has been gaining momentum since June. Office buildings, shopping centers, private schools and hospitals boosted the month's total 54% above August and 73% above a year ago. This type of work now exceeds last year's first nine months by 10%, compared with 4% at the end of August.

Industrial building also perked up in September, topping the $300-million mark for the first time this year.

Cost Indexes Dip This Month

Construction and building costs are lower this month as lumber prices drop $1 to $5 in seven cities.

ENR's 20-Cities Construction Cost Index now is at 829.58 and the 20-Cities Building Cost Index is down to 561.45. Both indexes, based on 1913 as 100, are 0.2% lower than a month ago. But compared to October 1959, the Construction Cost Index is 2.2% higher and the Building Cost Index is 1.1% higher.

In September, Philadelphia structural ironworkers got a 15-cent-an-hour wage boost under a new contract. In Denver, structural ironworkers received a five-cent hourly deferred wage boost on October 1.

In the weeks ahead, lumber prices will dominate the cost picture. Lagging lumber demand, heavy lumberyard and lumbermill inventories and sharp competition among local dealers brought the break in prices this month.

The lumber demand trend is definitely down and some lower prices may be seen in October. ENR's Fir Lumber Demand Indicator, which measures the balance between supply and demand at Northwest mills is down to −13, compared with −2 at the beginning of September.

Engineering Construction Contracts for September

Thousands of Dollars (000) omitted

	September, 1960											
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West *	Total U. S.	% Change '59 to '60 (Av wk)	U. S. Cumulative 1960	U. S. Cumulative 1959	% Change '59 to '60	Canada Sept. 1960
Public Works, Total	**87,113**	**243,825**	**147,576**	**211,502**	**204,135**	**179,294**	**1,073,445**	**+46**	**8,118,012**	**7,896,690**	**+ 3**	**54,768**
Waterworks	1,994	8,851	4,364	22,183	6,368	5,548	49,308	+133	362,789	314,047	+15	2,585
Sewerage	3,850	6,539	9,879	6,460	13,468	11,027	51,223	− 4	442,778	499,467	−11	6,347
Bridges	8,763	28,496	11,827	14,554	15,516	16,967	96,123	+138	634,658	447,063	+42	7,891
Earthwork, waterways	1,092	24,292	12,934	1,639	15,269	13,856	69,082	+16	607,350	703,098	−14	417
Streets and roads	36,991	72,638	45,967	94,916	86,018	48,205	384,735	+77	2,554,114	2,318,969	+10	10,001
Buildings: Residential	11,169	26,192	19,688	3,060	6,173	11,584	77,866	+163	530,578	508,030	+ 4	829
Other	21,103	64,427	29,780	37,102	32,268	52,297	236,977	+10	1,841,550	2,019,665	− 9	15,574
Unclassified	2,151	12,390	13,137	31,588	29,055	19,810	108,131	+13	1,144,195	1,086,351	+ 5	11,124
State & Municipal	74,468	199,591	116,561	196,624	156,470	145,801	889,515	+53	6,280,454	5,625,445	+12	43,729
Federal	12,645	44,234	31,015	14,878	47,665	33,493	183,930	+22	1,837,558	2,271,245	−19	11,039
Private, Total	**82,915**	**303,616**	**126,975**	**150,072**	**374,214**	**121,188**	**1,158,980**	**− 4**	**9,340,190**	**7,960,781**	**+17**	**102,620**
Bridges	.....	.....	100	.....	150	.....	250	−66	2,936	8,340	−65	.....
Buildings: Industrial	10,786	43,662	39,678	23,282	186,289	22,363	326,060	−33	2,130,485	2,288,368	− 7	42,244
Mass housing	48,156	171,320	35,432	75,277	99,828	77,348	507,361	− 2	4,675,074	3,566,674	+31	10,863
Commercial	23,883	85,649	47,141	47,231	56,227	16,862	276,993	+73	1,874,347	1,703,779	+10	40,342
Unclassified	90	2,985	4,624	4,282	31,720	4,615	48,316	+25	657,348	393,620	+67	9,171
Total, Sep., 1960—5 weeks*	**170,028**	**547,441**	**274,551**	**361,574**	**578,349**	**300,482**	**2,232,425**	**+15**	.....	.....	.....	**157,388**
Total, Aug., 1960—4 weeks*	114,868	439,369	461,728	182,472	401,477	258,803	1,858,717	....	.....	.....	.....	95,942
Total, Sep., 1959—4 weeks*	118,628	341,095	239,568	328,543	267,753	253,367	1,548,954	....	.....	.....	.....	115,746
Nine Months—1960*	**1,084,997**	**4,127,545**	**2,685,256**	**2,608,856**	**3,977,940**	**2,973,608**	.....	....	**17,458,202**	.....	**+10**	**1,421,280**
Nine Months—1959*	987,514	3,433,199	2,662,569	2,848,224	3,201,349	2,724,616	.....	....	.....	15,857,471	....	1,140,143
% Change '59 to '60	+10	+20	+1	−8	+24	+9	.....	....	.....	.....	....	+25

*Includes Alaska & Hawaii contracts

Management Rights Are Slipping

- **Labor experts accuse Supreme Court of making it possible for unions to erode management rights.**
- **They urge more vigorous protection of the right to contract out and to control work assignments.**

A major assault on management's right to manage has been made by the U. S. Supreme Court, whose "Big Brother" philosophy in recent labor cases has opened the door for more effective union resistance to management efficiency. Among the rights that have been jeopardized are the right to eliminate jobs, the right to assign work and the right to contract out.

The result is that employers in every unionized industry must increase their vigilance to preserve the rights they have not already lost. Labor contracts must be negotiated and drafted with greater care and caution. And arbitration proceedings, which have proved favorable to unions, must be approached more warily and be prosecuted more diligently.

These were some of the opinions expressed at the American Management Association's Fall Personnel Conference held in New York City last week.

Theophil C. Kammholz, former general counsel of the National Labor Relations Board, attributed what he called "an ominous overtone as to what is going on in Washington" to the Supreme Court's reluctance to find solutions to labor problems beyond its "comprehension."

What the court is doing, he said, is passing the buck back to the participants themselves.

The two decisions that were singled out to demonstrate the court's promotion of union encroachment on management prerogatives are known as the Warrior and Gulf Navigation, and the Chicago and North Western Railway cases decided earlier this year.

In the Warrior case, the court forced a company to submit to arbitration the question of whether it could, under not only the contract but also under industry and shop practice, contract out some of its maintenance work. It did this despite the fact that the company's labor contract specifically excluded from arbitration "matters which are strictly a function of management." The court considered the arbitration clause too broad, the exclusion too vague, and concluded that all doubts must be resolved in favor of arbitration.

In the Chicago and North Western case, the court forced the railroad to bargain with a union over its right to close down some substations that were no longer of any use. The action that management proposed, the court said, would eliminate jobs and thus affect terms and conditions of employment. Result was a legitimate labor dispute over which the union had a right to strike—and the Norris-LaGuardia Act prevented the issuance of an injunction against the strike.

The court's reasoning in both cases, Mr. Kammholz said, applies to all industries with these results: Employers who have accepted the principle of arbitration may now be forced to arbitrate management rights they never intended to relinquish even to that extent. They may be under an affirmative obligation to bargain over the right to eliminate jobs even before the elimination occurs. Subcontracting, now runs the grave risk of being a matter for forced bargaining even though the contract is silent on the issue.

Neither the court's approach nor management's inevitable reaction appear to be conducive to harmonious labor-management relations, Mr. Kammholz indicated. His advice: Take the bull by the horns, be firm with unions even if it means filing damage suits against them for their contract violations, and in the long run win their respect, if nothing else.

More critical, perhaps, than Mr. Kammholz was Francis A. O'Connell, Jr., labor counsel for Olin Mathieson Chemical Corp. He said the court has completely reversed "the time-honored doctrine that management retains all of the rights which are not surrendered in the contract" and has made arbitration an extension of collective bargaining.

He accused the court of encouraging unions to use "the arbitration process to invade management's rights, to attempt to impose restrictions on such management's rights, to attempt to impose restrictions on such functions as the right to assign work and the right to contract work out (two particularly sensitive cost areas)." Now unions can continue to do this, he said, even where they have sought and failed in contract negotiations to obtain the very limitations they seek to impose through arbitration.

Mr. O'Connell attributed some of the "damage" the court has done to the persuasiveness of Harvard professor Archibald Cox, who is now one of Sen. John Kennedy's labor experts. For the court, he explained, followed the Cox theory that a labor contract is a living document that does not say all it means and that necessarily incorporates the "common law" of the shop, which means industry practices. The theory reads into every labor contract, for example, an "implied covenant of fair dealing."

Among other things, Mr. O'Connell said, this means "that when you signed a contract with the union for a bargaining unit, you impliedly undertook not to decrease the unit, as by contracting work out." It also means, he said, that all a union has to do to force arbitration, if the contract has an arbitration clause, is to assert a claim that need not necessarily exist under a contract clause.

Among the remedies suggested by Mr. O'Connell is a general tightening up of the labor contract itself, with particular emphasis on arbitration and management clauses.

He suggested, for example, that employers who subscribe to arbitration make sure that only issues relating to specific contract provisions can be arbitrated. The question of what can and what cannot be arbitrated should be expressly reserved for a court to decide, he said. And a clause should be inserted, he added, limiting union rights to those granted in the contract in order to "prevent past practice from becoming a binding contract term" under the "interstices" philosophy of Mr. Cox.

Management rights can be further protected in a labor agreement, Mr. O'Connell said, by stating that they are fully retained and remain unaffected "except as abridged by a specific provision of this agreement." He suggested that the right to subcontract "be spelled out specifically, and so should your right to assign work."

New York Union Fights for 'Job Rights'

Elevator constructors make national issue out of local strike in clash over management's right to manage

A nine-week strike of elevator constructors in New York City has been pushed onto the national scene by the International Union of Elevator Constructors under the union banner of "job protection."

Claiming that the working conditions of the entire union are at stake, the international has called for voluntary contributions of one hour's pay per week from every member of the union for a strike fund to help the striking members of its Local 1 in New York.

The elevator constructors struck on August 1 after a breakdown in collective bargaining negotiations for a new labor contract. They were the fourth of the local trades to strike and are the last to settle. No settlement was in sight at the end of last week.

Union attention is concentrated on the first of the four principal strike issues, which are these:

- The employers, who are members of the Elevator Manufacturers Association, are seeking a contract clause that retains in management "the exclusive right to manage its operation and to direct its working forces." The clause would spell out management's right to determine how elevator, escalator, and dumbwaiter equipment, and machinery, should be designed and manufactured, the method fabrication, and the extent to which components may be assembled prior to delivery to job sites. The clause would impose on the union an affirmative obligation to install whatever the manufacturer brings to the job.
- The union is seeking an exclusive hiring hall. The employers have offered to employ not fewer than 50% of their workers through union referral.
- The employers have asked for a clause that will eliminate what they call the "featherbedding" practice of requiring the employment of operation and maintenance men to continue for a longer period than necessary during the final stages of construction.
- The employers and the union disagree over the retention of the existing wage differential between construction mechanics and servicemen working on maintenance and minor repairs.

In an open letter to all its members, the international union asserts that the management clause which the employers propose would "necessarily mean a loss of work for all elevator constructors."

The problem is essentially the same one that has always existed in the construction industry with respect to prefabrication.

The clause would place "our members at the whim of technological advancements," the union contends, "and deprive them of work they have traditionally and historically performed at job site."

Technological changes now taking place, it argues, make the clause increasingly dangerous to the union.

"With this clause in an agreement," the union continues, "any prefabricated or preassembled elevator components or mechanism can be brought on the job site, and would have to be installed by elevator constructors, even though, through prefabrication, the elevator constructor would be deprived of a particular work task he has always performed in the field. Such a clause would permit the manufacturers to have components preassembled by plant employees being paid a lower wage rate."

The union expresses the fear that an effort will be made a year and a half from now to get a similar clause in the Standard Agreement, which applies to the rest of the nation but not to New York. An employer spokesman last week said that such an effort will definitely be made.

The employers, he said, have simply taken the position that in the field of management they should be free to do what they want to do and what they have always done. The clause, he said, would merely spell out rights that now exist but as to which management has sensed increasing union unrest.

The spokesman stated that neither the present nor the proposed contract contains an arbitration clause and that the U. S. Supreme Court's recently expressed views on arbitration as a curb on management rights do not appear to be a problem (see p. 103).

The international union admits it is "hamstrung by the law." It said it considered, but rejected as illegal, a nationwide strike to support Local 1. It says it cannot press its position through secondary boycotts or project picketing because of restrictions "imbedded" in the law.

It warns, however, that it will not consent "to permit the manufacturers to operate in an 'open shop' manner" nor permit contract clauses that "destroy job protection" nor allow elevator constructors to be subject to "any" technological change. It states that it "will continue to insist upon being guaranteed work jurisdiction at the job site."

Hawaiian Labor Pact Challenged

AFL-CIO efforts to organize the Hawaiian construction industry have been legally challenged by the Hawaii State Construction Workers Union, an independent organization.

The union has charged that island contractors have played favorites with the AFL-CIO unions and that the master labor agreement with the basic trades is illegal. It has filed unfair labor practice charges and has authorized union president Charles T. Yamamoto to explore the possibility of affiliation with Harry Bridges' International Longshoremen's and Warehousemen's Union.

The new three-year master labor agreement between the General Contractors Association and the carpenters, laborers, operating engineers and cement finishers became effective September 1, (ENR Sept. 22, p. 252).

Mr. Yamatoto asserted the claim that his independent union had more carpenters working for some of the GCA contractors at the time the contract was signed than the AFL-CIO did. And ILWU regional director Jack Hall called the master labor agreement a "back door deal."

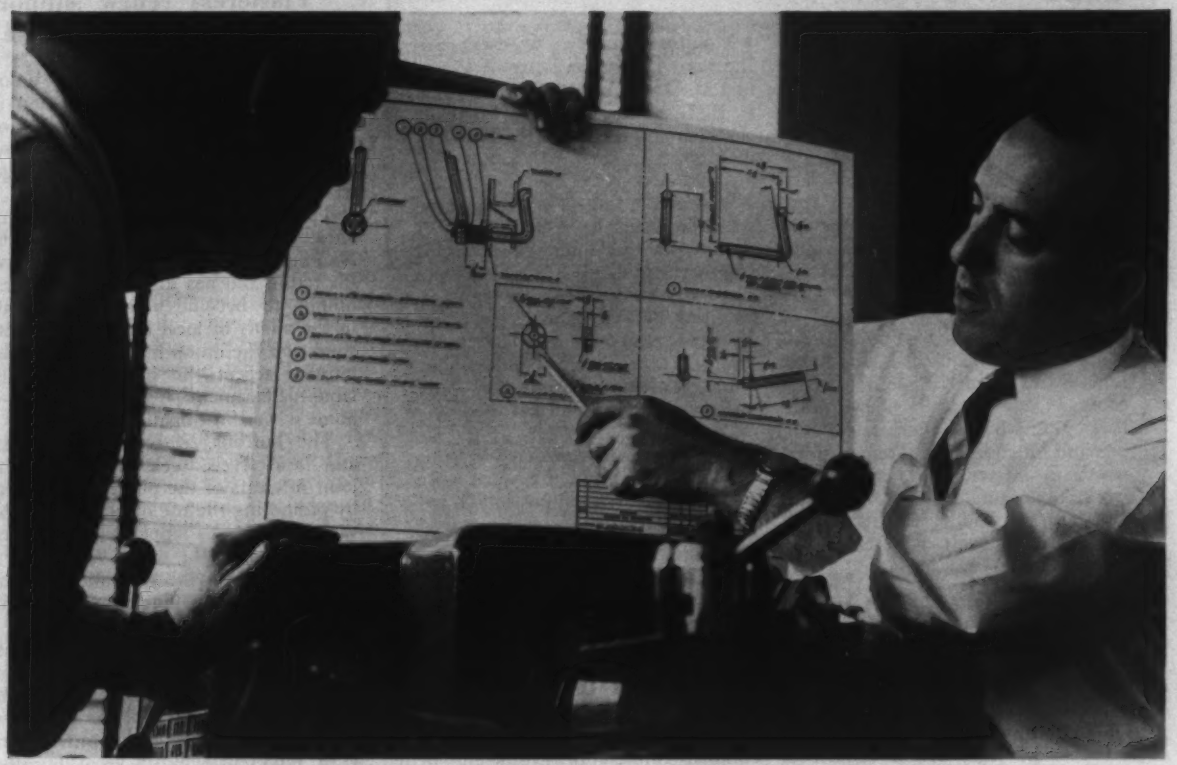
The contractors' association has denied the charges. Its executive secretary, Clarence Hodge, said the independent union could have filed for a consent election if it had controlled 30% of the workers of any contractor.

The independent union grew out of a secession from the carpenters union last year. Negotiations to get them back in the fold have failed. Walters K. Eli, director of the Building Trades Council, said the failure is regrettable and that the door has been left open for reaffiliation.

Meanwhile, Mr. Hall said, the ILWU would welcome the independents "if mutually satisfactory arrangements can be made."

"If we take them in," he added, "we are not just going to give them an office. We are going into the construction industry on Oahu with both feet."

OZALID *NEWSLETTER*



Newest black-line intermediate paper copies fine details . . . gives fast, easy-to-read prints

This paper's so new—and so hot—we're still getting plaudits from companies that field-tested it for us. (Top names in Engineering, Chemicals, Electronics, Petroleum, Metals, Retailing, Publishing.)

They found that Ozalid's new black-line 102 ITF picks up fine details, even from faint pencil-line drawings. And its opaque black line gives far more covering power than *any* comparable intermediate paper, sepia or black—*with no letup in speed.*

Why black line? A rich image that's a cinch to read, a snap to mass-copy. But that's not all.

The paper has a vellum base—100% rag, for durability and strength. It knows how to handle penciled, penned or typed additions. Also image corrections.

In addition, the base is transparentized—gives fast reprints even with age or constant use. And there's *no* transference, no damage when you file it with other papers, including Van Dykes and photographic material.

What machines accommodate 102 ITF? Any Ozalid machine with a Teflon screen or stainless steel mesh belt developer section. Or any other machine similarly equipped.

Here are some of the ways you'll benefit from 102 ITF:

You'll prevent damage to valuable original drawings by making fast mass-copies. Make changes without touching your original drawing. Distribute 102 ITF intermediates to branch plants, so they can make prints as needed. Save time in mass printing by using several duplicate originals. Superimpose one drawing on another, and print the composite on 102 ITF.

Chances are you've already thought of a dozen more uses for 102 ITF . . . or will, as soon as you start working with it. We'll appreciate it mightily if you'll shoot 'em along to us!

Top-quality, low-cost plastic-coated copy papers

Also from Ozalid—two superior copy papers. *Black* image paper, standard speed, for office use. And *blue* image paper, rapid speed, for engineering drawings.

Both are smooth-surfaced, semi-glossy. Both make crisp prints and copies. The black image paper (105 SZ) reproduces halftones from a film positive with photographic clarity. The blue image paper (208 SZ) is tough enough for shop and field use, and wipes clean with a damp cloth.

Both papers belong in your setup.

For more information, or a demonstration, get in touch with your nearest Ozalid man. His job is to help you do your job even better.

OZALID *Johnson City, N. Y. A Division of General Aniline & Film Corp. In Canada: Hughes-Owens Co., Ltd., Montreal*

Labor in Brief . . .

• **Prefer pension plan**—Members of the laborers union in western Washington have voted to take a 15-cent increase due under an existing three-year contract in the form of a pension contribution rather than as a wage increase. The increase has been taken as wages in the past two years. Pension plan must still be approved by Seattle, Tacoma and Mountain-Pacific chapters of Associated General Contractors.

• **Enough is enough**—The general counsel of the National Labor Relations Board ruled last month that a company was not guilty of bad faith bargaining when it refused a union demand for copies of contracts under which it farmed out maintenance work. The union, whose previous labor contract had a clause restricting the contracting out of maintenance work, asked for and got a list of the maintenance contracts.

• **Monitor vacancy filled**—Federal Judge F. Dickinson Letts of Washington, D. C., has appointed former F. B. I. agent Terence F. McShane chairman of the teamster board of monitors.

• **Seek accounting**—Three more construction firms have been sued by the International Union of Operating Engineers' Welfare Fund of Eastern Pennsylvania and Delaware for an accounting of welfare fund payments. Trustees, who previously filed suits against 11 other firms and individuals, claim three firms they have just sued owe $2,500 each.

• **No benefits for quitters**—A group of workers who quit their jobs when their employer served notice of a pay cut during the 1958 recession were not entitled to unemployment compensation, according to the Minnesota Supreme Court.

GSA Presses Equality in Hiring

The government has renewed its threat to take legal action against a contractor if qualified Negroes are discriminated against in the hiring of additional electricians for a federal building project in the district of Columbia. Discrimination is automatically a breach of contract on federal construction jobs.

The General Services Administration denied in a special statement that it is backing down from its insistence that Negroes be included among any new electricians hired for work on the $11-million government office building in downtown Washington.

McCloskey & Co., Philadelphia—headed by Mathew H. McCloskey, treasurer of the Democratic National Committee—is the prime contractor. The electrical work has been subcontracted to the Howard P. Foley Co. of Washington.

On August 25, Franklin Floete, head of GSA, the contracting agency for federal buildings, accused the Foley Co. of refusing an interview to a licensed Negro journeyman electrician who was seeking a job on the project.

In a letter to the McCloskey firm, Mr. Floete said the subcontractor had thus "indicated an intent" to disregard the clause in government contracts which forbids racial bias in hiring.

Mr. Floete told the McCloskey Co. to "take such steps within 10 days as may be necessary to bring the (Foley) company into compliance by employing . . . qualified Negro applicants without discrimination because of their race."

"Your failure to do so," Mr. Floete advised, "will, of course, constitute a breach of your prime contract with the government."

This was interpreted as an ultimatum that Negro electricians had to go on the job within a 10-day period. As time passed and GSA took no further action, questions were raised.

In its new statement, GSA explained that Foley's refusal to interview the Negro applicant had been corrected and this "apparent breach of the non-discrimination clause" had thus been disposed of. It said four Negroes in all had been interviewed.

But since the first Negro applicant sought work, Foley has done no hiring, GSA explained. Therefore, there has been no test of whether discrimination will be practiced.

The agency said that when hiring does begin again, "We shall insist that (it) . . . be done on a non-discriminatory basis."

"We are keeping in close touch with the situation and will take action if there is a breach of the non-discrimination clause by the electrical subcontractor . . ." the statement said. Big question is what that action would be.

Industry Promotion

Plasterers renew support after winning court case

The plasterers international union has renewed its active participation in the plastering industry's promotion program, which has been in a slump for several months because of legal challenges to its validity.

The union has resumed the role of an affiliate and regular member of the National Bureau for Lathing and Plastering and has urged all of its local unions to become active participants in the affairs of local bureaus. The one condition the union imposes is that the bureaus accept the principle of joint labor-management representation—a point it won in litigation.

The bureaus, at both the national and local levels, seek to advance the joint interests of the plastering industry by promoting the use of plaster and the various materials applied or installed by members of the union.

Legal doubts as to the validity of the program had been raised in several instances.

The international union has urged its local unions to abide by present contract provisions on industry promotion. But it has told them that the contracts, when renegotiated, must provide for joint representation on local bureaus.

Under the typical contract clause, contractors are required to contribute a few cents per hour worked by journeyman and apprentice plasterers to a local industry promotion fund administered by a local bureau.

Bricklayers and Glaziers Sign Long-term Contracts

Bricklayers in Providence, R. I., and glaziers in Minneapolis and St. Paul, Minn. are getting 15-cent raises this year under newly negotiated three-year labor contracts.

The bricklayers, whose scale was $3.85 before the increase, will also get a 10-cent increase next year and a 20-cent boost the third year. Their contract with the Rhode Island Chapter of Associated General Contractors retains a 12.5-cent health and welfare contribution, and provides for a 7.5-cent pension contribution this year and a 15-cent one during the last two years.

The Twin Cities' glaziers will get a 10-cent wage boost in 1961 and another 10-cent increase in 1962, pushing their scale to $3.60 after the third increase.

Benefits include nine cents an hour immediately for vacations, with increases of two cents during each of the last two years.

Legal

Engineer Held Entitled To Fair Value of Work

A person who performs work is entitled to the fair value of his services. If it is agreed that payment is to be in kind and if there is a default, Ohio law allows a recovery in money.

The question arose when an engineer and surveyor claimed that he had been employed by the owner of a tract of land to survey the land and divide it into a series of lots. In return, he was to be given a certain plot of ground. The owner sold the designated plot of ground to a third party. The engineer brought an action to recover the sum of $1,000, which he claimed was the value of the lot that he was to receive. The court granted a judgment for the sum of $590 with interest, the total judgment amounting to $899.18.

The owner contended that since the action was not brought on the contract, it should be dismissed. The judgment was affirmed by the appellate court[1], holding that where a contract for the performance of service does not fix the amount of compensation to be paid, the law implies an agreement to pay the fair and reasonable value of the services rendered.

The appellate court stated: "It has long been the established law of Ohio that, where, upon request, one does work for another, which has been accepted by the other party or has benefited him, the law invokes the standard of reasonableness, and the fair value of the services is recoverable. And also, when it is stipulated that the person performing the service is to receive his pay in something other than money, which through neglect or omission is not delivered, the contract becomes one for money. Newman v. McGregor, 5 Ohio 349, 24 Am. Dec. 293."

The appellate court cites cases in other states and authorities to sustain this principle of law.

(1) Dixon v. Kittle, 164 N.E. 2d 806, Court of Appeals of Ohio, March 11, 1959.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

OFFICIAL PROPOSALS

Bids Oct. 20, 1960

Advertisement for the Construction Bids for the Livonia Drain No. 2 in the City of Livonia, Wayne County, Michigan

1. RECEIPT OF BIDS
The Drainage Board for Livonia Drain No. 2 will receive sealed bids until 11.00 A.M., Eastern Standard Time, October 20, 1960 at the Board of Wayne County Auditor's Board Room No. 1222, City-County Building, Detroit, Michigan, at which time and place all bids will be publicly opened and read.

2. DESCRIPTION OF WORK
7550 feet of 16'-4" x 12'-0" monolithic concrete arch together with outlet structures and miscellaneous sewer relocations, connections, man-holes, catch basins, junctions, etc.

3. PLANS AND SPECIFICATIONS
Plans and specifications are on file and copies may be secured at the office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five Dollars ($25.00), *Check Only*, will be required on each set of plans, which will be refunded upon their return in good order within ten (10) days after the opening of bids.

4. BID BOND
A certified check or bank draft payable to the Drainage Board Livonia Drain No. 2 or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid. No bid may be withdrawn for at least One Hundred Fifty (150) days after the schedule closing time for receiving bids.

5. AWARD OF CONTRACT
The Drainage Board reserves the right to reject any or all bids, to award the work by sections, and to waive any irregularities in bidding. The successful bidder will be required to furnish satisfactory performance, labor and material bonds, and insurance certificates.

HENRY V. HERRICK
Wayne County Drain Commissioner
Chairman, Drainage Board
Livonia Drain No. 2

Bids: Oct. 20, 1960

The Port of New York Authority Newark Airport Terminal Building Second Baggage Claim Facility Contract NA-490.001

ADVERTISEMENT

Sealed proposals for construction of an addition to the Terminal Building for a baggage claim facility at Newark Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, October 20, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract (drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, October 6, 1960

Bids: Oct. 20, 1960

Soils Explorations and Foundation Investigations Staten Island, N. Y. Contract Spec. #SM-173

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time, on October 20, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON RICHMOND PARKWAY FROM PLEASANT PLAINS BOULEVARD TO OCEAN TERRACE ON STATEN ISLAND, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-173.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made *only* in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $50,725.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $3,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidder."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5405) will be received at Placerville, California, until 10 a.m. Pacific Standard Time, November 15, 1960, for furnishing labor and materials for Earthwork, Pipelines and Structures, El Dorado Main and Reservoirs, El Dorado Distribution System, American River Division, California, Central Valley Project. Location near Placerville, California, in El Dorado County. Principal items are excavation 186,000 cu. yds.; furnishing and laying 94,300 lin. ft. of pressure pipe; earth lining for reservoirs 26,000 cu. yds.; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; P. O. Box 707, Placerville, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box. 12, New York 36, N. Y.

Bids: Oct. 20, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and Canal Law Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 20th day of October, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer (Rte. 28)	R.C. 60-170	Old Forge-McKeever, SH 462	7.91	8" Cem. Conc. Pavt. 24' Wide = 7.56 Mi. Misc. Work = 0.35 Mi.	$126,000 Plans $5	$2,289,000
Oneida	M-60-11	Stony Brook Bridge E-57, East of New London	....	Cleaning & Painting Bridge	$130 Plans $5	2,600
DISTRICT No. 3, E. F. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga & Oswego (Rte. 104)	R.C. 60-169	Red Creek-Southwest Oswego, Pt. 3, SH 8214 Red Creek-Southwest Oswego, Pt. 4, SH 8189 Red Creek-Southwest Oswego, Pts. 1 & 2 & 4, SH 5717	10.38	Asph. Conc. Type 1A Twin Conc. Box 2 Spans 30' Total	$125,000 Plans $5	2,130,000
Onondaga (Rtes. 174 & 20N)	FARC 60-165 FASS 60-15	Skaneateles-Lafayette, Pt. 2, SH 8360 Marietta-Marcellus, SH 971 Skaneateles-Marcellus, CR 41 Proj. F-470(19); F-484(4); S-521(1)	5.34 (1.36 Acc.)	Asph. Conc. Type 1A = 6.70 Mi. Incl. 16' x 7' Twin Conc. Box—20' x 9' Twin Conc. Box	$85,000 Plans $5	1,518,000
Tompkins	FASS 60-16	Peruville-McLean, CR 107 Proj. S-283(3)	3.19	Asph Conc. Type 1A	$23,000 Plans $5	411,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston & Ontario (Rte. 20A)	R.C. 60-145	Honeoye-Vincent, SH 8178 Honeoye-Hemlock, SH 191 Livonia-Ontario County Line, SH 717	5.87	Asphalt Concrete, Incl. Bridge Rehabilitation	$48,000 Plans $5	843,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	FINTC 60-2 PSC 15216	Louisianna Street Viaduct over the N.Y.C. and Erie Railroads; Int. Rte. 506, New York State Thruway-Niagara Section (Louisianna Street Viaduct) Project I-190-1(23)74	0.39	Asph. Conc. Type 2A = 0.15 Mi.; Cem. Conc. Pavt. = 0.19 Mi.; Misc. Work = 0.05 Mi. Multiple Span Comp. Beam 825' Total	$85,000 Plans $5	1,525,000
Erie & Niagara	M 60-9	Erie Canal—Br. E-225 (Wakeman's) Br. E-242 (Pickard's)	....	Clean & Paint. 2 Bridges—Total 475± Tons	$800 Plans $2 for 2 Proposals	15,000
Niagara	PSC 6607	Elimination of Highway Railroad Crossings of the N.Y.C., Erie and Niagara Jct. Railroads in the City of Niagara Falls and Town of Niagara	3.14	Railroad Reloc. = 3.14 Mi.; Cem. Conc. Pavt. = 2.85 Mi.; Bit. Mac. = 1.99 Mi. Stab. Grav. = 0.57 Mi. 5 Hg Seps & 2 R.R. Pl. Gird. Bridges	$410,000 Plans $10	7,491,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence (Rte. 37)	FARC 60-174	Ogdensburg-Morristown, Pt. 2, SH 968 Project F-FG-650(9)	1.39 (0.31 Acc.)	Asph. Conc. Type 1A = 1.37 Mi.; Misc. Work = 0.02 Mi.; Access = 0.20 Mi.; Asph. Conc. Type 1A; 0.11 Mi. Gravel; Prestressed Conc. Beam 3 Sp. 184'± Tot.	$45,000 Plans $5	788,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange (Rte. 42)	R.C. 60-167	Port Jervis-Sullivan County Line, Pt. 1, SH 412 Port Jervis-Sullivan County Line, Pt. 2, SH 448	5.14	Asph. Conc. Twin Reinf. Conc. Closed Box 35.8' Sep.	$53,000 Plans $5	961,000
Westchester (Rte. 22)	R.C. 60-168	Bedford-Goldens Bridge, SH 5298A Goldens Bridge-Purdy-Croton Falls, SH 5464 Peekskill-Salem Center, Pt. 2, SH 262	4.65 (2.11 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' & Var. = 4.81 Mi.; Asph. Conc. = 0.16 Mi.; Bit. D.S. Treat. = 1.79 Mi.; H.G.S. Comp. I-Beam 4 Spans 188.4' Total; H.G.S. Rigid Frame, 1 Span 40.84'; Bridge Comp. I-Beam, 2 Spans 110.7' Total	$245,000 Plans $5	4,444,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rtes. 26 & 17C)	FARC 60-177	Vestal-Vestal Center-Choconut, SH 8331 Vestal, SH 420 Union Village: Main and Bridge Sts., SH 5412 Endicott, SH 174 Project U-UG-482(3)	1.49 (4.24 Acc.)	9" Cem. Conc. Pavt., 2 @ 24' & Var. = 1.47 Mi. Misc. Work = 0.02 Mi.; Access = 1.65 Mi. Cem. Conc. Pavt.; 0.69 Mi. Cem. Conc. Pavt. with Carbon Black; 1.85 Mi. Asph. Conc.; 0.05 Mi. Asph. Conc. Type 2B Hy. R.R. Gr. Sep. Comp. I-Beam, 5 Sp. 300.3' Total Repairs to Exist. Bridge over D.L. & W.R.R. H.G.S., Comp. I-Beam, 4 Sp. 207.5' Total; Bridge-Welded Pl. Gird., 7 Sp. 991' Total; H.G.S. Comp.-I-Beam & Gird. 3 Sp. 170' Total	$320,000 Plans $10	5,771,000
Broome (Rte. 11)	R.C. 60-173	Castle Creek, SH 267	0.52	Asph. Conc. Type 1A = 0.52 Mi. Bridge Comp. I-Beam 33' Span	$8,500 Plans $5	155,000
Broome (Rte. 26)	R.C. 60-171	Maine, SH 374	0.35	Asph. Conc. Type 1A, Incl. Prestressed Beam Bridge—64.6' Sp.	$8,000 Plans $5	145,000
Broome (Rte. 26)	R.C. 60-172	Maine, SH 374 Maine-Glen Aubrey, SH 1449	0.23	Asph. Conc. Type 1A = 0.23 Mi. Incl. Conc. Slab Bridge, 25.5' Span	$4,800 Plans $5	86,000
Sullivan (Rte. 17)	R.C. 60-176	Liberty-County Line Pt. 2, SH 5234	0.18	Asph. Conc. Type 1A, Incl. Comp. I-Beam Bridge 113' Span	$11,000 Plans $5	197,000
DISTRICT No. 10, AUSTIN M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 95)	FICBE 60-4	Interstate Route Conn. 511 Cross Bronx Expressway Cont. 4 (Plimpton Ave. to Walton Ave.) Project EI-95-1(44)2	0.53 (1.16 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 37' Wide and Var. = 0.50 Mi.; Misc. Work = 0.03 Mi.; Access = 0.44 Mi. Cem. Conc. Pavt.; 0.57 Mi. Asph. Conc. Pavt. 0.15 Mi. Misc. Work; H.G.S. Comp. Gird. 3 Sp., 224.8' Total; H.G.S. Conc. T-Beam 2 Span & Comp. Gird. 1 Span 188.2' Total; H.G.S. Conc. Frame 2 Span 115.2' Total; Hwy. RRg. S. Conc. & Steel Frame, 2 Span Plate Girder, 2 Span Conc. Frame 1 Span 396.7' Total	$575,000 Plans $10	10,439,000
Bronx (Int. Trg. Rte. 278)	FIASE 60-1	Int. Rte. Conn. 517 Arthur V. Sheridan Expressway Cont. 2 (Lowell Street to East Tremont Avenue) Project EI-278-1(45)	0.98 (1.39 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36' Wide and Var. = 1.30 Mi.; Asph. Conc. Pavt. = 0.68 Mi. Grading = 0.39 Mi.; H.G.S. Pl. Gird. Comp. I-Beam 2 Sp., 131' Total; Viaduct Comp. I-Beam, 8 Span, 595' Tot.; Viaduct Steel Beam, 9 Sp. 445.8' Total; 2 Ped. Ramps, Comp. I-Beams, 8 Sp. 534' Total	$308,000 Plans $10	5,594,000
Kings (Int. Trg. Rte. 278)	FIGE 60-3	Interstate Route Connection 512 Gowanus Expressway, Cont. 2 (Hamilton Ave., Clinton St. to Second Avenue) Project EI-278-1(54)15	0.61 (0.57 Acc.)	71" Reinf. Conc. Slab Roadway (on Viaduct) = 0.56 Mi.; Misc. Work = 0.05 Mi.; Sheet Asph. Pavt. (St. Repairs) = 0.57; Widen and Strengthen Exist. Elevated Steel Structure, 33 Spans = 294.6' Total	$600,000 Plans $5	10,378,000
Suffolk	FALIE 60-3	Long Island Expressway, Cont. 11 (Deer Park Ave. to Commack Rd.) Project U-862(28)	2.67 (3.43 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36' = 2.56 Mi.; Misc. Work = 0.11 Mi.; Access = 0.80 Mi. Cem. Conc. Pavt; 2.63 Mi. Asph. Conc. Pavt.; H.G.S. Comp. WF Beam, 4 Span 226.6' Total; H.G.S. Double Struct. Comp. WF. Beam 3 Span 128.4' Total	$200,000 Plans $5	3,710,000
Suffolk	HSPTS 60-2	Hecksher State Parkway, Cont. No. 4 Sunrise Highway to Hecksher State Park	6.27 (4.43 Acc.)	Traffic Signs	$1,800 Plans $5	32,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: Oct. 17, 1960.

Construction of New School Buildings Public Schools 304 & 305

BOARD OF EDUCATION—BUREAU OF CONSTRUCTION

Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT

The Deputy Superintendent of Schools, Office of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York will receive applications for prequalifications from contractors who may wish to submit bids for the proposed hereinafter specified contracts.

For the General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures for the following new schools.

OFFICIAL PROPOSALS

Public School 304, Sumner Avenue between Pulaski and Hart Streets, Borough of Brooklyn. Spec. No.'s 25, 26, 27 & 28 of 1960.

Public School 305, Monroe Street between Marcy and Tompkin Avenues, Borough of Brooklyn. Spec. No.'s 13, 14, 15 & 16 of 1960.

The prequalification application form must be secured at the Office of School Buildings, Bureau of Construction, Room 407, 42-15 Crescent Street, Long Island City 1, New York, and submitted to the Deputy Superintendent of Schools, at the same above address.

Bids when advertised, will be received only from prequalified bidders.

The time for submitting prequalification applications by contractors will expire on Monday, October 17, 1960.

Joseph R. Weiss, Deputy Superintendent of Schools.

Dated: September 29, 1960.

JJF: dem

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5414) will be received at Clinton, Oklahoma, until 10 a.m., Central Standard Time, November 2, 1960, for furnishing labor and materials for earthwork, structures, concrete reservoir and remote control and telemetering system for Anadarko Aqueduct, Washita Basin Project. Location Anadarko, Oklahoma. Principal items are 4,000 cu. yds. excavation; 1,125 cu. yds. concrete in structures and reservoir; 1,800 bbls. furnishing and handling cement; lump sum, furnishing and installing remote control and telemetering system; and other work. Completion time 250 days. For particulars, address Bureau of Reclamation, P. O. Box 1609, Amarillo, Texas; P. O. Box 146, Clinton, Oklahoma; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

MANY CONTRACTORS DEPEND ENTIRELY UPON THE

OFFICIAL PROPOSAL COLUMNS

OF

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

OCTOBER 20TH ISSUE CLOSES OCTOBER 10TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Field Supervisor. Large established midwest consulting firm has permanent position in building construction supervision for thoroughly qualified and experienced man. Mechanical engineer preferred. Moving expenses paid. Send complete resume to P-4833, Engineering News-Record.

Project Engineer for large Capehart Housing Project in Missouri. Age to 35. Please send resume and salary requirements to P-5270, Engineering News-Record.

Plant superintendent required—experienced in prestressed precast concrete. Steady employment. Fenrich Prestressed Concrete, 1-340-58 Ave., Edmonton, Alberta, Canada.

Project Superintendent for large Capehart Housing Project in Missouri. This position requires a man of outstanding organizational and supervisory ability. Please send resume and salary requirements to P-5281, Engineering News-Record.

Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable individual with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Send complete resume of educational background and experience, including personal qualifications and small photograph to P-5347, Engineering News-Record.

(Continued on the following page)

FOREMEN AND SUPERINTENDENTS for ATLAS MISSILE BASE CONSTRUCTION

Craft foremen, site superintendents and area superintendents needed immediately at 12 Atlas launcher sites in the Lincoln, Nebraska area. Above average salaries and living conditions.

WESTERN CONTRACTING CORPORATION
P. O. Box 644
LINCOLN, NEBRASKA
Telephone: GRover 7-9271

OFFICE ENGINEER RESIDENT and FIELD ENGINEERS

Positions available for men with experience in hydraulic and sanitary engineering. Water supply, sewerage and drainage projects.

Submit experience record, references, date available, age, and salary requirements.

ELSON T. KILLAM ASSOCIATES, INC.,
Hydraulic & Sanitary Engineers
48 ESSEX STREET
MILLBURN, NEW JERSEY

CIVIL ENGINEER

Permanent new position for graduate civil engineer in the salary range of $511 to $588 a month (plus longevity pay). Vacation, sick leave, dual pension program, and other fringe benefits. Must be U.S. citizen and possess an EIT certificate. Some related experience desired to work in design and construction of sewer, water, street, sidewalks, and curbs. Travel expenses paid on invitation and moving expenses paid for selected candidate. Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

WANTED

Experienced ground water Hydrologist

for immediate employment for approximately ten months contract period to set up ground water information center and design ground water program. Possibility of continued employment on salary following initial contract period. Write full particulars, including salary and expense schedule required, to E. Bruce Jones, Chief of Water Development,

WYOMING NATURAL RESOURCE BOARD
215 Supreme Court Bldg., Cheyenne, Wyoming

• POSITIONS VACANT

(Continued from opposite page)

Assistant To City Engineer. Salary to $6,588. Fringe benefits. Opportunity for varied design and construction experience. Large city planning, street, sewer and expressway programs under way. Write City Manager, Zanesville, Ohio before November 1.

Permanent position open for civil engineer with 5 to 10 years general experience in municipal engineering. Must have substantial experience in water and sanitary engineering fields, including treatment works. Salary open. Age limit 40 years. Reply to Parker and Associates, Consulting Engineers, 1714 9th Street, Greeley, Colorado.

Estimator—Engineer; Progressive, Expanding commercial and industrial building contractor in Louisville, Ky. Requires young man with growth potential. Two years minimum experience. Grow with the South. Replies held strictly confidential. Our employees know of this ad. Write brief resume, salary expected, and availability to P-5323, Engineering News-Record.

Wanted Engineers—Five years general experience, married without children, for Pitometer Surveys of municipal water distribution systems. Permanent position with frequent location changes. Salary open. Profit Sharing. The Pitometer Associates, 50 Church Street, New York City.

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Please send complete information on experience, references, salary requirements, and availability. Indianapolis Power & Light Co., 25 Monument Circle, Indianapolis 6, Indiana. Employment Division.

Help Wanted Men. Assistant estimator to help project manager in large contractor's office. Engineering experience preferred. Must have at least 5 yrs. experience with large general contractor. In answering give age, education, experience and salary desired. This is a permanent position in Washington, D.C. for right party, with chance for advancement. P-5396, Engineering News-Record.

Graduate Civil-Structural Engineer with approximately five years experience in reinforced concrete and structural steel building design. Registration not required for position with progressive western firm. Send complete resume and salary requirement to O. J. Scherer, Consulting Engineer, 300 West Boston, Las Vegas, Nevada.

Village Engineer, Brookfield, Illinois, grad. eng. required, municipal experience and registration desirable, min. starting salary $6,900.00. Apply Homer Ball, Village Manager, Village Hall.

Engineering Superintendent—Latin America. Major U.S. company with permanent operation in Latin America has topflight opening for topflight engineer-administrator. Will direct all engineering activities—mechanical, electrical, construction—in 7,000 employee division. Must have experience in at least three of following: Mechanical maintenance, irrigation-drainage, housing and road construction, railroad equipment maintenance. Knowledge of Spanish desirable but not essential. For full information regarding position, benefits and salary, write in confidence. Please send complete resume including present salary with first letter. P-5380, Engineering News-Record.

Have opening for recent Civil Engineer Graduate with military obligations completed who desires to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Martin K. Eby Construction Company, Inc., P.O. Box 1679, Wichita, Kansas.

Comptroller-Accountant for large general contractor's office to take charge of all bookkeeping. Must have experience in general contractor's office in similar capacity. Age 35 to 45. When writing, advise educational background, experience, salary requirements. Permanent position in Washington, D.C. for right party. P-5392, Engineering News-Record.

PROJECT SUPERINTENDENT
STEAM ELECTRIC STATION, OVERSEAS

To supervise construction and start-up of 50,000 kw station in Far East. Heavy power plant construction experience required at some level of responsibility. ME or EE university degree preferred. Local living allowance and family accommodation. Two year minimum field tour starts about March 1, 1961 preceded by 2-4 months assignment in N. Y. design office. This is a responsible position with a reputable consulting firm. Send complete resume and references to

P-5308, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS VACANT

Principal Civil Design Engineer. Pacific N.W. office of national firm has senior supervisory position for grad. registered professional engineer with fifteen or more years experience, substantially in design of hydro-electric projects. Arch dam structural design experience is desirable. Send resume to R. W. Beck and Associates, attention of Norman R. Carson, 1500 Tower Building, Seattle, Washington.

Soils Engineer. Graduate engineer with some course study in soils engineering and at least one year of experience in charge of a Soils Section, plus other experience in soils engineering. Starting salary, $625 per month. Write Personnel Division, Oregon State Highway Department, Salem, Oregon.

Canon City, Colo.: City Engineer or Registered Land Surveyor. Salary $6,060 per year. Reg. or elig. to be reg. as prof. eng. in Colo., or reg. or elig. to be reg. as Land Surveyor in Colo. Apply to City Manager, City Hall.

• POSITIONS WANTED

Chief Estimator-Project Manager — Fully qualified to handle work from bidding stage to completion. Best of references. Building Construction, Heavy Construction, Sewage and Water Treatment Plants PW-5011, Engineering News-Record.

Engineering Executive. Wide industrial, chemical and civil experience; all phases administration and management. Organize and direct large design jobs or work in consulting and exec. asst. capacities. Proposals, reports, contracts, liaison, trouble shooting, P.E. in 5 States. PW-4725, Engineering News-Record.

Superintendent-Engineer, experienced in strip mining and earth moving. Now employed, available soon. PW-5262, Eng. News-Record.

General Manager; 41 yrs. old. Fully experienced in all phases of Heavy, Highway, and Airport Construction business. Prefer west of Mississippi River. References. Available for interview. R. E. Phillips, 512 Conkey, Burlington, Wis. Ph. Rockwell 3-7549.

Project Manager—Const Supt, Flood Control, Roads, Tunnels, Bldgs, Excellent Mechanical Background, Immediately available, 9238 E. Parkhill Drive, Bethesda 14, Md. 01 2-6196.

Assistant Superintendent: Over 10 yrs. in supervisory capacity on Industrial Bldgs., Hospitals & Super Highways. Field lay-out & proj. engineering background. J. T. Hock, 808 W. Walnut, Robinson, Ill., Phone 973-WX.

Gen Supt. or Supt.—35 years experience— Major project-heavy constr. West Pointer. At present employed on one of the Niagara Power Project as, Gen Supt., desire change. My experience cover thorough work on, dams (both earthfill hydro), bridges, Pile Driving, Mass earth and Rock excavation, (including drilling and blasting) Waterworks, Docks, Cuffer Dams, Foundation, Mass Concrete; Pumpcrete, form work, Tunnels, Rigging. Expert organizer. Resume on request. PW-5317, Engineering News-Record.

Dredge General Superintendent. BSME. Reg. Eng. 20 years' experience. Handle job from bidding to completion. Design and build all types dredging equipment. PW-5370, Engineering News-Record.

Construction Superintendent—industrial experience—Mid Atlantic preferred. PW-5362, Engineering News-Record.

• POSITIONS WANTED

Chief Estimator—Engineer. 12 years experience commercial, industrial, heavy construction. Capable of handling jobs from takeoff to completion. Presently employed but willing to relocate. PW-5364, Engineering News-Record.

General Supt.—Long record of profitable results with own forces and subs. Engineering background. Late forties. Attitude and personality geared to a cost conscious, on schedule technique of field and office management. Top level responsibility desired. PW-5374, Engineering News-Record.

Sales: Heavy construction materials to architects, engineers, contractors, industry, municipalities. Arch. grad.; 15 yrs. exper. PW-5341, Engineering News-Record.

Const. Engr. C.E., P.E., age 35, experienced proj. engr. & estimator bldg. & heavy const., available immediately. PW-5401, Engineering News-Record.

Engineer; 32, B.S.C.E.; 6 years consulting (municipal projects), plant and facilities engineering, wants to work in estimating, pricing and buying with small to medium sized contractor. Northeast or Midwest. PW-5393, Engineering News-Record.

Civil-Sanitary Engineer, 17 years experience, design, construction, contract negotiations, sewers, treatment plants, concrete, eligible for registration, desire change, Midwest or Mid-Atlantic, contractor or consultant. PW-5394, Engineering News-Record.

Civil Engineer B.S. 7 years experience domestic and overseas work, highways, drainage and sewer designs and construction, speaks Spanish fluently seeks responsible position. PW-5386, Engineering News-Record.

SELLING OPPORTUNITY WANTED

Construction Product Sales? Need representation east of the Mississippi? Two or more graduate engineers with sales and management background available for challenging assignment. Promotion and/or sales to all applicable markets. Replies on your letterhead promptly answered. RA-5286, Engineering News-Record.

PART TIME WORK WANTED

Mechanical Estimators desire work on contract basis for contractors, engineers, and architects. Experienced in take-off, and pricing all phases of mechanical construction. Budget or competitive bid estimates, or quantity surveys prepared. Registered Professional Engineer. PTWW-5382, Engineering News-Record.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS
TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.
330 West 42nd St., New York 36, N. Y.

ELECTRICAL ENGINEER

TOLL COLLECTION EQUIPMENT SUPERVISOR

Consulting Engineer seeking applicants for permanent position • department head status, for major toll facility. Position includes responsible charge of operational procedures and maintenance of electronic toll collection equipment including dynamic weighers, axle counter relays, I.B.M. console equipment and remote recorders.

Prefer Graduate Electrical Engineer with basic power and electronic background. Require experience, low voltage relay circuits, electronics and allied fields and demonstrated administrative ability with special aptitude for public service.

Salary open.

Apply in writing with complete resume of experience and background.

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
P.O. Box 111
Rochester, Pennsylvania

Engineers

Los Angeles

The Bechtel Corporation earnestly seeks high caliber applicants who are desirous of becoming established with a progressive and leading organization with opportunities in design and construction field engineering. Those in the organization participate in an incentive program which affords opportunity, added benefits and security.

Electrical

Minimum 6 years experience in design of steam power plants or heavy industrial projects. Areas of work include power distribution design, equipment specifications, control circuit and control board design, instrumentation and automation. Supervisory experience and leadership ability desired. B.S. degree required.

Mechanical

Minimum of 6 years experience in design of steam power plants or heavy industrial projects. Areas of work include process design, equipment specifications and procurement, and instrumentation and automation. B.S. degree required.

Civil-Structural

Must have experience in heavy industrial projects and have leadership ability. B.S.C.E. degree required.

Relocation allowances cover moving costs plus transportation reimbursement for you and members of your family. Send confidential resume, including present and required starting salary, to Technical Recruiting Division. Personal interviews will be arranged for qualified candidates.

Bechtel

Corporation
5120 Soto Street
Vernon, California

ENGINEERS

Permanent openings for qualified

CIVIL

Several openings for experienced persons in design of structural steel and reinforced concrete applicable to design of Bridges and Buildings. Opening for Sanitary major in design of sewage and waste disposal systems.

ELECTRICAL

Need several in the design and layout of Power Plants, Test Facilities, Industrial and Institutional projects.

MECHANICAL

Several openings for men experienced on Process Piping design and layout, preparation of Flow Diagrams, and cost estimates.

Also openings for Designer-Detailers and Draftsmen.

Positions open to Engineers desiring long range employment with opportunity for professional development. Many company benefits, including paid vacations, sick leave, holidays. Excellent employee benefit plan.

Write fully, include complete experience and salary data.

SVERDRUP & PARCEL ENGINEERING COMPANY
Engineers — Architects
915 Olive St., St. Louis 1, Mo.

Pennsylvania Department of Highways Offers
Challenging opportunities in the PHILADELPHIA AREA for

HIGHWAY DESIGNERS

with C.E. degree and several years of design experience
*** 5 JUNIOR DESIGNERS * 3 DESIGNERS * 1 SQUAD LEADER**
Starting salaries from $5500 to $7800 per year.
Permanent positions. Excellent growth potential. Fringe benefits.

Send Resume To:

PERSONNEL, PENNA. DEPT. OF HIGHWAYS, HARRISBURG, PA.

SOILS AND MATERIAL ENGINEER

Consulting engineering firm with international reputation located in Midwest wants man with 5 to 10 years experience. Work divided between design office and field. Capable of preparing specifications and drawings for all phases of soils and foundation work.

CONCRETE ENGINEER

Also wants concrete engineer and technician with 5 to 10 years experience, capable of preparing specifications and directing start of mixing operations on large projects. Should be capable of acting as trouble shooter on aggregate and cement problems. Send detailed resume, including salary requirements to

P-5358, Engineering News-Record
520 No. Michigan Avenue, Chicago 11, Ill.

ENGINEERS DESIGNERS

Permanent positions with Arthur G. McKee & Company in Cleveland for:

ENGINEERS, DESIGNERS, DRAFTSMEN

experienced in design work on Oil Refineries, Chemical Plants, Heavy Industry or any type of Steel Plant or Steel Plant Equipment design. Applications will be kept confidential.

Send detailed resume and photo to:

G. VICTOR HOPKINS
ARTHUR G. McKEE & COMPANY
2300 Chester Avenue, Cleveland 1, Ohio

WANTED

ENGINEERING ASSOCIATES

SANITATION WATER SUPPLY (foreign & domestic)
PETROLEUM (foreign)
GEOLOGICAL & MINING (foreign)
CHEMICAL & PETRO-CHEMICAL (foreign and domestic)
WATER RESOURCES (foreign)
HYDRO-ELECTRIC (domestic & foreign)
CONSTRUCTION (domestic & foreign)

President and Vice-President levels. Complete charge of your own division. Drawing account against substantial share of Division profits before tax PLUS income from own secured investment. Minimum Investment $25,000.00
GLOBAL Activity—TOP Recognition

Send complete resume including photo to:

P. O. Box 968,
Station "B", Montreal, Quebec

WANTED

Hydraulic Dredging Manager

Capable of estimating, obtaining work, and supervising operations. Reply to

P-5307, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

For Sale

CONCRETE PLANTS

■ Four Koehring 2 Cu. Yd. Tilting Mixers, Johnson 400 Cu. Yd. 6 Compartment Bin with Rescreening, Johnson Auto Weigh Batchers with Dials, Feeder Conveyor, 7315 Bbl. and 800 Bbl. Cement Silos with Bucket Elevator, Fuller Bulk Cement Unloading System (R.R. cars to silos), Aggregate Stacking and Reclaimer Conveyor System, Aggregate Chilling System, Water Heating System. Power Requirements 220/440V—3 Phase—60 Cycle. Plant in operation, available Oct. 31, 1960; located at Niagara Falls, N. Y.

■ Johnson Concrete Mixing Plant (less mixers) with 300 Cu. Yd. Bin, Weigh Batchers, Auto-Recording Dials, 12' x 44' Bulk Cement Storage Silo, 24" x 242' Barber-Greene Inclined Belt Charging Conveyor, Elevators, Screw Conveyors, etc. Plant dismantled, ready for shipment F.O.B. Arizona by Oct. 31, 1960.

■ Four Koehring 2 Cu. Yd. Tilting Mixers, Johnson 314 Cu. Yd. 6 Compartment Bin, Johnson Weigh-Batchers with Dials, 3000 Bbl. Cement Silo withBucket Elevator, Belt & Screw Conveyors, Syntron Feeders, Water Heating System. Power requirements 220/440—3 Phase—60 Cycle. Plant in operation, available Dec. 31, 1960; located in State of Washington.

AGGREGATE PLANT

■ Six Telsmith & Syntron Feeders—Heavy Duty Vibratory, 5 Telsmith Screens, #138 Gyratory Crushers 5' x 6" x 12' Rod Mill with Complete Set of Rods, Classifiers, Washers, Sand Pumps, Radial Stacker, Conveyors, Sand Dryer, Rotary Grizzler, Electric Motors, etc. Power requirement 220/440 V—3 Phase—60 Cycle. Plant in operation, available Oct. 31, 1960; located in State of Washington.

AGGREGATE PLANT COMPONENTS

■ Barber-Greene 161 ft. Conveyor for 30" belt; two tensioners, 30 HP Motor—3 Phase—60 Cycle—220/440 V; Barber-Greene 83 ft. Conveyors for 30" belt; two tensioners, 15 HP Motor—3 Phase—60 Cycle—220/440 V.; three Drive Heads with motors and tensioner pulleys. Plant available now; located at Niagara Falls, N. Y.

MERRITT-CHAPMAN & SCOTT CORP.
260 MADISON AVENUE
New York 16, N. Y.—ORegon 9-3500
FOR INFORMATION AND INSPECTION
Call or Write P. F. Gaynor, Jr.

For Sale: DRAGLINES—SHOVELS—CRANES
All makes and models, ½ yd. to 35 yd.
EUCLIDS: Rear, Bottom Dumps and Scrapers
Other equipment available not listed above
William Lubrecht, III Construction Equipment
311 W. Diamond Avenue, Hazleton, Pa.
Gladstone 5-4041 5-0253

MINING CLAIMS—MILL SITES—MACHINERY & EQUIPMENT—ROCK CRUSHING & SCREENING EQUIPMENT, TRUCKS, DRAGLINES, DOZERS to be sold in

BANKRUPTCY SALE at PUBLIC AUCTION

Ordered sold by Hon. Jethro S. Vaught, Jr., Referee in Bankruptcy at Albuquerque, New Mexico and the Small Business Administration in the matters of Manganese Corp. of Arizona, #2719; M&M Mining Co., #2734; Rike Mining Co., #2734; and Pinnacle Mining Co. #2735, sale to be conducted at mill site near

SOCORRO, NEW MEXICO

Take highway 85 South out of Socorro 7 miles to dirt road, turn west 3 miles to mill site (watch for Auction Signs).

TUES. OCT. 18, 1960, 10 A.M.(MST)

OFFERED: Entirety, Units & Single Lots

CLAIMS & MILL SITES include MCA Millsite claims No's. 1 through 6, Big Basin Claims 1 through 10, Teddy Claim, Flopsy claim, Van Pelt Claim, Red Hill Millsites 1 through 11, Niggerhead 1 through 3. EQUIPMENT: Wemco #1-3M 2-gravity sink float mill; Austin Western portable crushing & screening plant; Wemco #1-1M sink-float mill, rock chute and primary crusher; Baldwin-Lima-Hamilton 24" roll crusher & conveyor, Model 703 shovel, Model 25 shovel, Little Giant dragline, International & Caterpillar tractors, Diamond-T trucks, lowboy trailer, various trucks, pick-ups, Jeeps, air compressors, 7 Butler buildings-housing mining operation, large qty. road building materials including 1,000,000 yds. crushed rock, 2,000,000 yds. concrete surfacing materials, 100,000 tons rip-rap, etc., office furniture & equipment. TERMS: Cash, sale subject to confirmation to Referee in Bankruptcy and SBA. Financing available to responsible purchaser (for terms apply to Denver Regional office of SBA or to Auctioneer Irv Rosen, Davis Bldg., Dallas, Texas, Phone RI7-2148). Trustee: Holm O. Bursum, Jr., Socorro, N.M.

FOR ADDITIONAL INFORMATION AND ILLUSTRATED BROCHURE CONTACT AUCTIONEER.

RALPH ROSEN ASSOCIATES, INC.
AUCTIONEERS · REAL ESTATE BROKERS · APPRAISERS
DAVIS BLDG.-1309 MAIN-DALLAS, TEX.
Phone Riverside 7-2148

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

INSTRUMENT REPAIR AND SALES

Midwest distributors for:

- Fennel Instrument Corp. of America
- Buff & Buff Mfg. Co.
- David White Instr. Co.
- Eagle Instrument Co.
- Rolatape, Inc.

PROMPT REPAIR SERVICE
FIFTY YEARS EXPERIENCE
All types Transits and Levels

INSTRUMENT SALES CO.
ILLINOIS
CHICAGO RICHMOND
3947 W. Lawrence Ave. TECHNICAL DIVISION
PHONE: COrnelia 7-4646 PHONE: 2153

BUSINESS OPPORTUNITY

Engineering Corporation for sale. N.Y. State charter available. Principals only. BO-5376, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
WILSON Engineering Corp.
College House Offices HARVARD SQ. CAMBRIDGE MASS.

CONSTRUCTION SUPERVISION
Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
National Schools of Construction
Est. 1932
Satsuma, Florida

FOR SALE
McKiernan-Terry PILE HAMMER
Model 9B3 Serial # 12723
Complete overhaul direct from factory.
Price $4,250.00
KELLY PILE DRIVING CORP.
174-05 Douglas Avenue, Jamaica 33, N. Y.
REpublic 9-5620

FOR SALE
Model 1005 Long Crawler Koehring Crane
19' overall length x 42" treads; 120' boom and jib; Cummins Diesel-Torque Converter; used for steel erection only. CONDITION PERFECT—Firm Price $60,000. Located within 100 miles New York City.
CONSTRUCTION EQUIPMENT CORPORATION
Long Island City, N. Y.

THE FOLLOWING EQUIPMENT IS FOR SALE AT OUR YARD AND SUBJECT TO PRIOR SALE

1 #12 Cat Motorgrader (new condition)
1 New Hough HU Payloader w/Drott bucket
1 Shield Bantam T35 6 ton Truck Crane w/backhoe (new condition)
1 #44 Barber Green Ditcher 18"x7' (new condition)
1 D8 Cat Tractor w/Cat 25 power unit
1 12 cy LeTourneau LP Pan
7500 sf New Type Universal Forms w/ accessories
300 4' and 100' Patent Scaffold frames w/accessories

SOUTHERN ENGINEERING & CONSTRUCTION CORP.
P. O. BOX 484, RICHMOND, VIRGINIA

PIPE

Surplus New & Used

FOR SALE, WANTED OR RENT

Faster From Foster

Immediate Deliveries
Any Quantities from
Our Warehouse Stocks

STEEL PIPE at BIG SAVINGS!

Limited Service Electricweld and A-252 Grade 2

10¾" x .188 wall
12¾"x .188 and .281 wall
24" x .312 wall

Limited Service & Structural

20" x .312 wall

Get Big Savings on these double random length items. Ideal for medium pressure lines, pipe piles, building columns and many structural uses.

Also from Stock—Large Quantities

Prime Tested Line Pipe

API-5L Electricweld
6⅝"—8⅝"—10¾" All walls

Send for our complete stock list

L. B. FOSTER CO.

Pittsburgh 30 • Los Angeles 5 • New York 7 • Chicago 4 • Houston 2 • Atlanta 8 • Cleveland 35

Material Offered Subject to Prior Sale

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS

PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.

103 VARICK AVE., BROOKLYN 37, N.Y.

PIPE

2,000,000 ft. 2"	3.50#	to the foot
1,000,000 ft. 3"	7.70#	
1,000,000 ft. 4"	10.98#	
500,000 ft. 6"	18.60#	
200,000 ft. 8⅝"	28#	
400,000 ft. 10¾"	35#	
75,000 ft. 12¾"	40#	
10,000 ft. 16"	42#	

All No. 1 Grade Plain End and Cleaned

INDIANA-OHIO PIPE CO.
P. O. Box 5412 Shepard Station, Tel: CL-3-5527
COLUMBUS 19, OHIO

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

When you need

PIPE . . . fast

use this section, as many contractors do, as a pipe buying directory. It can save you time when you want to know, quickly, where to buy good new or used pipe.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.

DRexel 1-3930
820A KANSAS AVE., KANSAS CITY, KANS.

FOR SALE

USED STEEL

Beams—8" to 36" Std, WF, & H
Pipe & Casing—6" to 10 ft. dia.
Plate, railroad trestles,

LARGE TONNAGE

Specially Priced in T/L or C/L Lots.

LEOPOLD COHEN IRON CO.
3000 S. Kedzie Chicago, 23, Ill. BI 7-6336

FOR SALE

Located in Central United States:

Plymouth 5 Ton Locomotive, 24" gauge diesel
Eimco #401 Air Locomotive, 24" gauge
20—2½ c.y. Dump Cars, 24" gauge with couplers

Located on East Coast:

4 Conway, Type 75, Mucking Machines
1 Double Drum Wellman-Seaver-Morgan Hoist, 300 H.P.

Located on West Coast:

8—60E12 Diesel Electric Joy Shuttle Cars
4—J.S.L.—7 Joy Loaders
1—430 K.W. Generator operated by four 4—71 G.M. Diesel Motors including Switchgear
12,000' of 36" steel Fan Line, Spiral Weld with Couplings
20,000' of 6" steel Spiral Welded Pipe with Couplings
4,000' of 4" steel Spiral Welded Pipe

FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Avenue St. Louis 10, Mo.

DE LAVAL PUMP

25 Million G.P.D.
Complete with 1000 H.P.
Steam Turbine.

PHILLIPS SUPPLY CO.
4802 Roosevelt San Antonio, Texas

RAILS-TIES

TRACK ACCESSORIES

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"
• *Tandem Axle* • *Front Wheel Drive*
For specifications, prices, delivery, write
MEMPHIS EQUIPMENT COMPANY
P.O. Box 2852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

RAILS

MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.

EUCLID SCRAPERS

6—14 TDT's, 18 yard Scrapers Good condition; $15,000 each. Located in Central Illinois.

Minnesota Branch
EUCLID DIVISION, GMC
3305 Republic Ave., Minneapolis 26, Minn.
WEst-9-2646

PILING

SURPLUS NEW and USED — For Sale, Wanted or Rent

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 56' & 48' & 40' & 35'
1900 PCS. MP112—12', 25', 35', 40', & 60'
2800 PCS. BETH.—AP3 20', 25', 30', 35' & 60'
2500 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 60' & 65'
1400 PCS. BP8, BP10, BP12—BP14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'
500 PCS. 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
TORONTO—BALTIMORE—JACKSONVILLE
MIAMI—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton Industrial Loco Crane, 60' Boom

691' ELEC AIR COMPRESSOR
Chgo Pneu YCB—440V—Skids

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephones MU 2-3057 or MU 2-1898

STEEL SHEET
PILING by DIALING
Call St. Louis Collect
CHestnut 1-4474

RENT, SELL OR BUY
H-BEARING PILE
FAST SERVICE
NATION-WIDE STOCKS
LOW RATES
ALL LENGTHS
ALL SECTIONS
PILE DRIVING EQUIPMENT
NORTH, SOUTH, EAST or WEST

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

PROFESSIONAL SERVICES

MIDDLE ATLANTIC

Joseph S. Ward and Associates

Consulting Soil and Foundation Engineers

Site Investigation, Boring Supervision, Laboratory Soil Testing, Foundation and Pavement Analysis and Design, Construction Supervision, Engineering Reports and Consultation

91 Roseland Avenue — Caldwell, N. J.
Jefferson Building — Phila., Penna

Albert C. Jones Associates

Consulting Engineers

Private and Municipal Engineering
Sewerage-Sewage Treatment
Water Supply and Distribution
Investigations and Appraisals
Photogrammetric Engineering
Aerial Maps

223 High St. Mount Holly, New Jersey

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services

Kansas City - Cleveland - New York

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

642 Fifth Ave. — New York 19, N. Y.

Lawrence S. Waterbury

Consulting Engineer

Bowling Green 9-9298
26 Broadway New York 4

Severud-Elstad-Krueger-Associates

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Ave., New York 17, N.Y.

Steinman, Boynton, Gronquist & London

Consulting Engineers

HIGHWAYS - BRIDGES - STRUCTURES

117 Liberty St., New York 6, N. Y.

Lockwood, Kessler & Bartlett, Inc.

Consulting Engineers

Civil Engineering Investigations and Reports, Design and Construction Supervision of Bridges, Highways, Pipelines, Expressways, Industrial Buildings, Sewerage, Airports and Municipal Improvements, General Site Engineering, Seismic Subsurface Investigation, Cadastral, Geodetic & Topographic Surveys, Photogrammetric Engineering & Mapping.

One Aerial Way, Syosset, New York

Bogota, Colombia — San Juan, P. R.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highway and Expressways

900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

The Kuljian Corporation

Engineers • Constructors

WE DESIGN AND CONSTRUCT

Power Plants • Public Works • Processing Plants • Oil Refineries • Chemical Plants • Textile Plants • Airport Facilities • Military Installation

1200 N. Broad St., Philadelphia 21, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.; Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.

Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office
221 W. Olive Street, Scranton, Pa.

Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
300 Mt. Lebanon Blvd., Suite 100 Pittsburgh 34, Pa.
Box 1446—Grand Junction, Colorado
Nashville, Tennessee
Tucson, Arizona
Buchans, Newfoundland

Professional Assistance

in solving your most difficult problems is offered by these consultants.

Buchart Engineering Corp.

Consulting Engineers

Highways — Bridges — Sewer Systems
Surveys — Water Works — Dams — Reports — Supervision — Industrial
Municipal — City Planning — Structures

55 S. Richland Ave., York, Pa.
Lancaster, Pa. — Washington, D. C.

SOUTH

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.

First Nat'l Bank Bldg., Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Consulting Engineers

Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highway and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.

360 East Grand Ave. Chicago 11, Ill.

Roy B. Everson

S.E. Consultant Since 1900

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems.
A New System for Automatic Control

211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Sargent & Lundy

ENGINEERS

Consultants to the Power Industry

Studies • Design • Supervision
140 South Dearborn Street, Chicago 3, Ill.

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection — Research
Tests — Development

Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory

1810 North 12th St. Toledo 2, Ohio

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction, City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.

1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR

• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories

907 Penn Ave. Pittsburgh 22, Pa.
Branches-Manhasset, N.Y.-Atlanta, Ga.

CHECK

this section whenever you need professional advice.

CONSULT THESE SPECIALISTS...

When you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages.
Rates for the Professional Services section are:

PER WEEK	13 times	26 times	52 times
¾"—$14.35	$13.35	$12.45
1½"—$23.85	$22.30	$21.00

SEARCHLIGHT
Equipment Locating Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment not currently advertised. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads on pages 112 & 113 to see if what you want is not currently advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P.O. Box 12, New York 36, New York

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P.O. Box 12, New York 36, N. Y.

Please help us locate the following equipment:.....

.....

Name..... Title.....

Company..... Street.....

City .....Zone ....State 10/6/60

CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Co....113
Associated Pipe & Fitting Co....113
Baker Inc., Michael Jr....111
Bechtel Corp....111
Cohen Iron Co., Leopold....113
Conmaco, Inc....113
Construction Equipment Corp....112
Foster Co., L. B....113
Frazier-Davis Construction Co....113
General Motors Corporation, Euclid Division....113
Indiana-Ohio Pipe Co....113
Instrument Sales Co....112
Kelly Pile Driving Corp....112
Killam Associates, Inc., Elson T....109
Lubrecht III, William....112
Madison, Wisconsin, City of....109
Memphis Equipment Co....113
Merritt-Chapman & Scott Corp....112
Midwest Steel Corp....113
Mississippi Valley Equipment Co....113
McKee & Co., Arthur G....111
National Schools of Construction....112
Pennsylvania Dept. of Highways....111
Phillips Supply Co....113
Rosen Associates, Inc., Ralph....112
Southern Engineering & Construction Corp....112
Stanhope, Inc., R. C....113
Sverdrup & Parcel Engineering Co....111
Western Contracting Corp....109
Wilson Engineering Corp....112
Wyoming Natural Resources Board....109

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 72
Allis-Chalmers 98-99
American-Marietta Co. 64
American Sisalkraft Corp. 75
Armco Drainage & Metal Products, Inc. 52-53
Atlas Copco 67

Barber-Greene Co. 92-93
Barco Manufacturing Company 8
Bethlehem Steel Co. 1; 89

Chicago Pneumatic Tool Company, Reichdrill Div. 85
Cleveland Trencher Co. 79
James B. Clow & Sons, Inc. 6-7
Columbia-Southern Chemical Corp. 13
Concrete Plant Mfgrs. Bureau 49
Concrete Reinforcing Steel Institute 33
Crane Co. 18

John Deere Industrial Div. 27
R. E. Dietz Co. 63
F. W. Dodge Corporation 12
Dodge Division, Chrysler Corp. 10-11

Elgood Equipment Corp. 74
Esso Standard Oil 97

L. B. Foster Co. 2
Freyssinet Affiliates 57

The Geodimeter Co. 61
Geophysical Specialties Company 70-71
Griffin Wellpoint Corp. 4-5
Gulf Oil Corporation 58-59

Harbert Construction Corp. 86
Homelite Div., Textron Inc. 54-55
A. C. Horn Div., Sun Chemical Corp. 84
Hose-McCann Telephone Co., Inc. 74

Inland Steel Company 76-77
International Business Machine Corp. 9
International Harvester Co., Construction Equipment Div. 14-15

The Jaeger Machine Co. 74

Kern Instruments Inc. 81
The Kinnear Mfg. Co. 81

Lock Joint Pipe Co. 16
Lone Star Cement Corp. 42-43

Marion Power Shovel Co. 62
Mayo Tunnel & Mine Equipment 74
McGraw-Hill Book Co., Inc. 115
Mueller Co. 94

Ozalid Div., General Aniline & Film Corp. 105

Penn-Dixie Cement Corp. ..... 2nd Cover
Phoenix Bridge Company 88
Phoenix Bridge Company 90
Precision Instruments Inc. 72
Presstite Division, American Marietta Co. 100

Reda Pump Company 63
John A. Roebling's Sons Division The Colorado Fuel and Iron Corporation. 51

Sauerman Bros., Inc. 50
Sheffield Div., Armco Steel Corp. 73
Sika Chemical Corporation ..... 3rd Cover
Sikorsky Aircraft Div., United Aircraft Corp. 60
Spencer, White & Prentis, Inc. 81
John W. Stang Corp. 29
Swenson Spreader & Manufacturing Co. 56

E. A. Thompson Co., Inc. 90
The Timken Roller Bearing Co. ..... 4th Cover
Truck Mixer Mfgrs. Bureau 41

U. S. Rubber Co., Mechanical Goods Div. 20
U. S. Steel Corp. 30-31, 68-69, 82-83
Universal Sewer Pipe Corp. 3
University of Chicago Press 72

Winpower Mfg. Co. 90

Professional Services 114

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities ... 109-111
Notices
Proposals 106-109
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) ... 112, 113
Advertisers' Index 114

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 86,647

D. S. ROBERTSON, Advertising Sales Manager
HUGH J. CARLSON, Assistant Business Manager

ADVERTISING REPRESENTATIVES

Atlanta, 3—1301 Rhodes-Haverty Bldg.
Robert H. Powell, Jr.

Boston, 16—McGraw-Hill Bldg., Copley Square
C. D. Neulen

Chicago, 11—520 No. Michigan Ave.
L. H. Hunt, W. G. Payne, Earl S. Moore, Jr.

Cleveland, 13—1164 Illuminating Bldg., 55 Public Square
H. A. Bergstrom, F. P. DiToro

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
John Grant, Robert T. Wood

Denver, 2—Tower Building, 1700 Broadway
J. W. Patten

Detroit, 26—Penobscot Bldg.,
R. I. Mace

Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tisbout

New York, 36—500 5th Ave.
C. D. Neulen, H. T. Olsen
Robert L. Barker

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen
Patrick Kelcher

Pittsburgh, 22—4 Gateway Center
Malcolm Russell

Portland 4, Oregon—Room 445, Pacific Bldg.
Scott Hubbard

St. Louis, 8—Continental Bldg.,
E. B. Mingle, Jr.

San Francisco, 4—68 Post St.
John J. Hernan

OTHER SALES OFFICES:

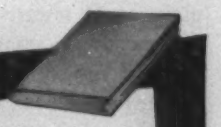
Boston 16—350 Park Square Bldg.,
United Kingdom, Edwin E. Murphy, 95 Farringdon St., London E.C. 4.—Germany, Austria, Stan Kimes, 85 Westendstrasse, Frankfort/Main, Germany—Switzerland, Italy, France and Belgium, Michael R. Zeynel, 2 Place du Port, Geneva, Switzerland

Just Out—Third Edition

CONSTRUCTION ESTIMATES AND COSTS

By H. E. PULVER
Consulting Engineer

You can make sounder, more accurate construction estimates using the practical methods in this tested manual. It covers every detail of the estimator's job—describes step-by-step how you can compute material, labor, equipment, and overhead costs, plus profit. You get full treatment of light and heavy construction work—from excavating, piling, bracing, and various uses of concrete, masonry, wood, and structural steel—to roofing, lathing and plastering, heating, air-conditioning, plumbing, electrical work, and painting. Clear, full-page diagrams illustrate the preparation of estimates. Covers every step of the job—from preliminary investigation and approximate estimates, to detailed estimates that include overhead; material, labor, and equipment costs; and profit. **640 pp., 126 illus., $12.00**



DESIGN AND CONSTRUCTION OF ASPHALT PAVEMENTS

Describes equipment used in planning, testing, repairing, and laying of asphalt pavements. **By J. Martin, Hot Mix Asphaltic Concrete Assoc. of Okla.; and H. Wallace, The Asphalt Inst. 298 pp., 219 illus., $11.50**

COMPOSITE CONSTRUCTION IN STEEL AND CONCRETE

Covers design of steel beams and concrete slabs for composite construction. **By I. Viest, Bridge Res. Eng.; R. Fountain, Portland Cement Assoc.; and R. Singleton, Nelson Stud Welding. 147 pp., 90 illus., $7.50**

AERIAL PHOTOGRAPHIC INTERPRETATION

Principles and applications; landforms and rock types; and practical methods and advantages of aerial photo interpretation. **By O. Lueder, Geotechnics and Resources, Inc., 452 pp., 256 illus., $17.50**

FREE EXAMINATION

McGraw-Hill Book Co., Dept. ENR-10-6
327 W. 41st St., New York 36, N. Y.
Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Pulver—Const. Est. & Costs, $12.00
☐ Martin & Wallace—Design & Constr. of Asphalt Pavements, $11.50
☐ Viest et al—Comp. Constr. in Steel & Concrete, $7.50
☐ Lueder—Aerial Photo. Interpretation, $17.50

(PRINT)
Name .....
Address .....
City ..... Zone .... State .....
Company .....
Position .....
For price and terms outside U.S. write McGraw-Hill Int'l., N.Y.C. ENR-10-6

Editorials

Upgrading Pollution Control

REP. JOHN A. BLATNIK makes an important point in supporting his proposal to take federal water pollution control activities out of the Public Health Service (ENR Sept. 29, p. 23). He says, "Water pollution today is not primarily a health problem."

We agree—as long as he says "primarily." In the past, water pollution has been a major health problem in the U. S., and it remains so today in many areas of the world. But the classic contaminants that caused epidemics of sufficient virulence and frequency to make water pollution an outstanding health problem here have yielded to engineering, chemical and biological knowledge.

No one can say for sure that water pollution won't become a health problem again. Officials of the Public Health Service have made it plain repeatedly that they consider the newer contaminants as possible menaces—the insecticides, herbicides and other organics, as well as radioactive materials that find their way into water supplies. Much research is needed, these officials point out, first merely to determine ways of detecting and measuring the suspect substances, and second to find out whether or at what levels they have harmful effects.

In considering any move of federal pollution control activities from the Public Health Service, it should also be borne in mind that the methods of studying and combatting the health threats in polluted water are close kin to methods concerned with other undesirable effects of water pollution: fish kills, deoxygenation, scum, foaming, weed growth, odors, tastes. Each pollutant may be a separate chemical or biological problem, but the impetus and the machinery for attacking pollutants that are health threats are about the same as for attacking those that are not.

We agree with another of Congressman Blatnik's points—implied, perhaps, rather than explicit: Water pollution is much bigger and much more important to this country than its present administrative level in the PHS might indicate. Therefore, it would be highly desirable to upgrade the federal government's organization concerned with water pollution control. Although it is questionable whether it should be divorced from the Department of Health, Education and Welfare—since the health angle does still exist—water pollution control activities are badly in need of added status. Perhaps the desirable road to a solution may emerge from the White House Conference on Water Pollution in December and the current study by the Senate Select Committee on National Water Resources.

We urge the prime movers in any reorganization efforts to consider this: Water pollution is an inseparable part of the whole field of water resources, which includes water supply, river control, watershed protection, groundwater replenishment, as well as water and sewage treatment. It is not a separate problem to be isolated and considered all by itself. Therefore, let's coordinate it more closely with the other matters of water conservation and control that are of federal concern.

Dean of Contractors

THE AMERICAN SOCIETY OF CIVIL ENGINEERS next week will do honor to itself in naming Guy Frederick Atkinson to its very exclusive list of honorary members. For Mr. Atkinson is without question the dean of construction contractors. At 86 years of age, still active as chairman of the board of the company that bears his name, he has had an almost inconceivable 70 years in construction—largely in big-time, engineered construction (see p. 65).

No professional engineer (he quit school to begin work at 16) Guy Atkinson has built the projects of civil engineers for a lifetime. He was a mature 75 when he joined ASCE, principally out of interest in its Construction Division. Now, eleven years later, he will be honored along with two engineering educators and a consultant (ENR June 30, p. 24); moreover, he will be the only contractor among ASCE's 48 living honorary members.

The name of Guy Atkinson will sit well—and may it stay long—on the list of those great designers, builders, teachers and administrators that comprises ASCE's honorary member roster.

Model Law at Issue

A REVISED AND CONTROVERSIAL MODEL LAW has been put to the engineering societies for endorsement by the National Council of State Boards of Engineering Examiners. Principally at issue will be a clause that would permit practice of engineering through corporations, provided registered engineers sign and seal all work done involving engineering judgment.

Opponents of corporate practice tried unsuccessfully to influence NCSBEE's committee in this revision of its model law adopted in 1946. No less a combined force than ASCE, the American Institute of Consulting Engineers, and Consulting Engineers Council offered a substitute draft of the clause at issue. They proposed requiring that a majority of stockholders, directors and officers of the corporations rendering engineering services be registered engineers. But they got nowhere.

The document NCSBEE has approved (by 37½ to 4½ vote) is not law, but merely a guide to revision of existing state laws. Revisions to state laws in the area of corporate practice will still be fought as strenuously in the state capitals where they have perennially been of concern. However, such controversies should not be allowed to obscure the good work NCSBEE has done in revising the 24 other sections of its guide to better registration laws.

Throgs Neck Bridge - Owner: Triborough Bridge and Tunnel Authority; Consultants: Ammann & Whitney, Emil H. Praeger, E. Lionel Pavlo; Contractors for Substructure: Merritt Chapman & Scott Corp., Steers-Snare Joint Venture, Fehlhaber Corp.; Contractor for Paving: Horn Construction Co. and Queens Structures Corp. **Verrazano-Narrows Bridge** - Owner: Triborough Bridge and Tunnel Authority; Consultants: Ammann & Whitney, Emil H. Praeger; Contractor for Tower Piers: Steers-Snare Joint Venture.

PLASTIMENT reduces shrinkage, controls rate of heat development

Throgs Neck Bridge, illustrated above, and the Verrazano-Narrows Bridge, the two largest suspension bridges now under construction in the United States, stand on Plastiment concrete substructures. The nearly completed Throgs Neck Bridge spans 1,800 ft. between towers and stretches 2,910 ft. between anchorages on Long Island and the Bronx. The Verrazano-Narrows Bridge, connecting Staten Island and Brooklyn, will ultimately span 4,260 ft. between towers to become the longest suspension bridge in the world.

Plastiment Retarding Densifier reduced the rate of internal heat development in massive sections of the critical substructures and reduced shrinkage. The use of Plastiment in the tremie concrete improved flow characteristics and minimized the development of laitance. Rapid strength gain was a bonus to the contractor.

Plastiment features are detailed in Bulletin PCD-59. Ask for your copy. District office and dealers in principle cities; affiliate manufacturing companies around the world. In Canada, Sika Chemical of Canada, Ltd.; in Latin America, Sika Panama, S.A.

Sika

SIKA CHEMICAL CORPORATION

Passaic, N. J.

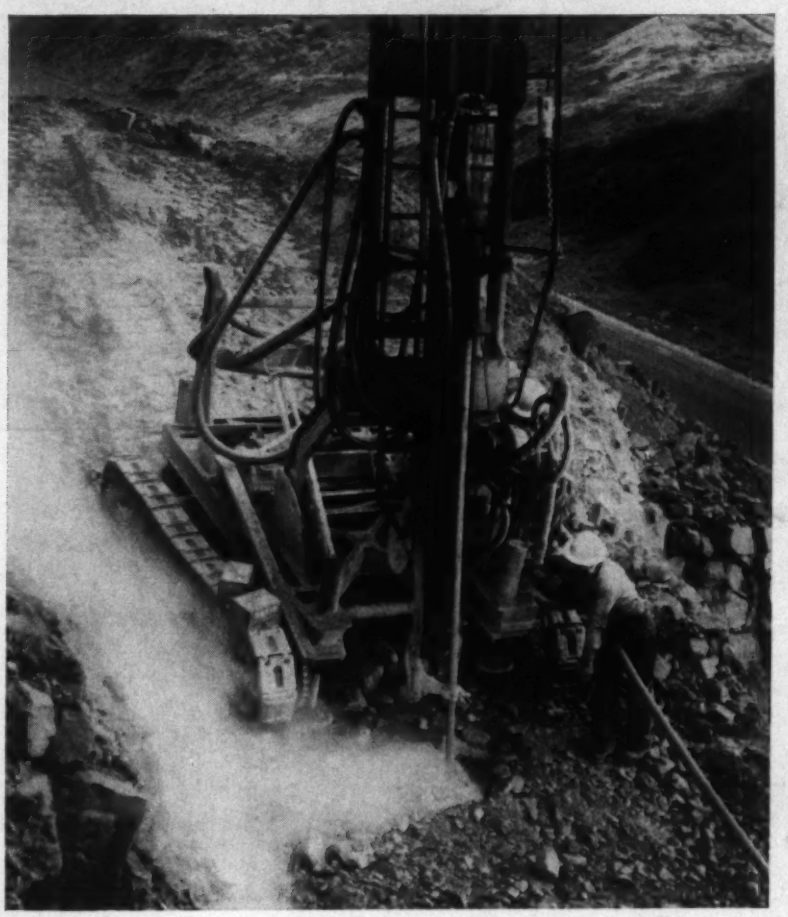
"We drilled over 5,000 ft., averaging 15 redresses per bit, with Timken® carbide insert bits"

Special report from Rogers Construction Company

LOCATION: U. S. HWY. 30, THE DALLES, OREGON

Operating conditions:
Lava-Basalt

In converting part of U. S. 30 from a two-lane to a four-lane highway, Rogers Construction Co. of Portland, Ore., had to drill through Lava-Basalt. Holes in this very fryable rock varied from 25 to 60 feet. And for drilling on this very abrasive ground, Timken® carbide insert bits were a "natural". They set records. Some of the original 010 4½" bits have drilled well over 5,000 ft., averaging 15 redresses per bit.



Which Timken Bit should you use?

In hard, abrasive ground, the Timken carbide insert bit gives you greatest economy. But in softer ground, use the low-cost Timken all steel multi-use bit. Both bits are interchangeable in the same thread series; you can switch bits as the ground changes. What's more, dozens of different Timken bits fit the same drill steel. And both types are made from Timken electric furnace fine alloy steel, have special shoulder unions to protect against drilling impact. Let us help you select the right Timken bit for your job. Call or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

TIMKEN®
removable rock bits